THE BUILDER

Incorporating

ARCHITECTURE & THE BRITISH ARCHITECT

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THIS WEEK'S NEWS

A FURTHER SELECTION of letters received on the subject of Collaborative Training of Architects and Builders is published on p. 623

A SPECIAL SUPPLEMENT on "Prefabricated Buildings for Export," illustrating nineteen such buildings which will be shown at the BIF at Earls Court, and including articles on the markets and needs of New Zealand, South Africa and South Rhodesia, Canada, Australia and the USA, is published on p. 625

A REVIEW of the exhibition on Danish architecture which is now being held at the Building Centre, appears on p. 650

"WHEN WILL THE GOVERNMENT, really intent on reducing the cost of houses, refer all the building price rings to the light of full publicity and act on any report of the Monopolies Commission?" asks a correspondent. p. 651

THE CONCLUDING ARTICLE is our series entitled, "Some Aspects of Building Contracts," is given on p. 653

THE BRITISH INDUSTRIES FAIR opens at Castle Bromwich, Birmingham and Earls Court and Olympia, London, on April 27. A review of some of the principal exhibits of interest to the building industry appears on p. 654

QUANTITIES for single dwelling-houses not exceeding a maximum floor area (living space) of 1,500 sq. ft., will no longer be required by member firms of the LMBA. p. 663

THE BISHOP OF LONDON will present awards to LMBA apprentices. p. 663

THE OUTSTANDING NEED for more exports was emphasised by Sir Archibald Forbes, the retiring president of the Federation of British Industries, in the course of his remarks on the Budget at the Federation's annual general meeting last week. p. 664

TRANSPORTABLE TOWNS

BRITAIN'S prefabricated building industry has, within the past four years, become a major force in the export market. A mere trickle of £80,000 worth of buildings exported in 1949 had grown to £2¾ millions in 1950, to £5½ millions in 1951 and last year to £7½ millions—a stream of development paralleled in intensity only by the motor-car industry's efforts, and worthy of the highest praise. Nor is there any reason why, with improving techniques and gain in selling experience, the process of development should stop.

The Minister of Works, Mr. Eccles, has suggested that the ultimate export figure of the industry may eventually reach £100 millions annually; certainly the reports from the Commonwealth countries and the USA given in the special section included in this week's issue on Prefabricated Buildings at the British Industries Fair at Earls Court indicate that the surface of the export field has scarcely been scratched. This is not to say that British firms have been idle; on the contrary many are now looking to these overseas markets, though in some cases, one suspects, more with the intention of bolstering up development and research for the home market than of making any all-out attack upon the export (and particularly the dollar export) field.

A number of manufacturers, however, have seen the overseas markets as providing a difficult and complex but none the less fascinating and rewarding opportunity for development. It has become clear to these firms that there is no such thing as "the overseas market"; that every country requires separate consideration of needs and preferences, and that this can be done properly only by a survey of technical needs and marketing problems. In this they are, of course, correct. Each of these countries is, in fact, a market in its own right and is unlikely to respond to a sales policy which is merely directed towards selling the overflow from home production. Technical problems—of material, labour, insulation and jointings—and preferences in planning, finishes, etc., vary considerably from country to country, and even within the same country.

No form of prefabrication which is inflexible is therefore likely to achieve much success, but, given adaptability, a careful survey by technicians as well as by marketing experts should reveal opportunities in many lands for buildings for many purposes. An examination of our illustrated section will indicate that there is really no limit to the types of building or uses to which those buildings may be put—as hospitals, storage accommodation, airport buildings, schools, churches and, of course, housing. In effect, complete towns may be transported.

Exporters should pay particular attention to problems of erection, for they may meet with some opposition from the traditional building industry in the importing countries which are prone to see in prefabrication a threat to their livelihood and to the welfare of the crafts. That this quite natural reaction is in fact based on a false premise is demonstrable, for the speed with which most prefabricated buildings may be erected means that turn-over is more rapid and profit may be maintained. But exporting firms may have to consider the setting up of erection teams, at least until the good will of the construction industry in the importing country is assured.

If we have said little about the opportunities for the prefabricated building in Great Britain, it is because the contribution which the industry can make to levelling off the balance of trade is so great as virtually to put the home market into second place. But it should not require emphasis that a thriving prefabrication industry busily engaged in export must also strengthen itself at home through intensified research and experience. Its future seems bright indeed.

NOTES & NEWS

THE AA RECEPTION

WHETHER it was due to the presence of rather fewer members and guests than on other occasions, or to the "siphoning off" effect of the additional members' bar provided for the first time on the second floor, the congestion at the Architectural Association's annual reception, which was held at 34, Bedford-square on April 16, seemed less acute than usual, and consequently it was easier to enjoy the varied fare provided by way of exhibitions and entertainments which is always a feature of this event. The official roll of those received by the President and Mrs. Anderson numbered "nearly 1,000," among whom, as usual, were many names distinguished in architecture and the other arts, and in numerous aspects of the building and constructional industries.

The exhibitions were lively and varied. In the Gallery, on the ground floor, "Some match box lids collected by Mr. Eric Jarrett" seemed an altogether too modest description of the large and colourful array displayed—surely, not all those types of matches have been sold in England? By way of contrast, a visit to the second-floor studio disclosed some interesting examples of ship models collected by Mr. L. A. J. Rowley and a selection of seascapes from the collection of Mr. P. J. Westwood. In the back Members' Room there was a small exhibition of AA School work, while the contemporary paintings displayed in various parts of the building were lent by the Contemporary Art Society, and others.

Entertainment included three performances of A. P. Herbert's "Two Gentlemen of Soho," presented by the AA Dramatic Society; a conjuring show, "The Biggest Thing in Magic," by Mr. George Braund; and a quiz devised by Mr. Graeme Shankland and Mr. Michael Ventris. Dancing, in the basement Lecture Halls, where the decorations rather surprisingly employing a classical motif, were gayer than last year's, was again to the music of Lou Preager's Ambassadors Band.

Though few present could hope to take in more than a fraction of all these good things in the time available, the AA once more succeeded in providing an invaluable opportunity for renewing acquaintances among architects and builders.

HOUSING IN HOLBORN

HOLBORN BOROUGH COUNCIL Housing Committee, faced with an acute housing shortage, and resolutely refusing to be defeated by difficulties of land shortage, marked on Monday last the commencement of another block of 64 flats in Red Lion Square, by the unveiling of a plaque inset in the west wall, the ceremony being performed by the Mayor, Councillor E. Ling Cooper. These flats, designed by Mr. S. A. G. Cook, ARIBA, the borough architect, and being built by Messrs. Allen Fairhead and Sons, Ltd., have several interesting features, among them a covered playspace for children under part of the building, and the incorporation of the Borough's "war room" (as the Civil Defence Operational Headquarters are now known).

The chairman of the Housing Committee is Alderman Wilfred Mullen, OBE, who has just been appointed Sub-Controller of the Borough's CD Services—a voluntary post which he held with distinction in the 1939-45 war. As such, Mr. Mullen has taken a special interest in the new CD Training Headquarters off Theobald's-road which has been most excellently converted by the Borough Architect from part of an old warehouse.

SIR HUGH CASSON IN CANADA

SIR HUGH CASSON makes his appearance in Toronto to-morrow night (Saturday) as guest speaker at the annual dinner of the Royal Architectural Institute of Canada, holding their 46th annual assembly.

THE STONES OF VENICE

"THE DECAY here is becoming very noticeable. The quay at the Dogana is collapsing and various piling works are being carried out," writes Mr. H. Frank Hoar, FRIBA ("Acanthus"), who is at present on holiday in Italy. He adds: "I cannot imagine how the campaniles stay up!"

PROFESSIONAL ANNOUNCEMENTS

Mr. Arnold P. Holdsworth, FRICS, chartered quantity surveyor, of 73, Bower-road, Sheffield, 10, and of Liverpool and Hull, has taken into partnership his son, MR. RODNEY HOLDSWORTH, MR. WILLIAM MACFARLANE, his managing assistant in Hull, and MR. ROBERT COUSENS, of the Sheffield staff, all professional associates of the RICS. The style of the firm will be MESSRS. HOLDSWORTH, SON AND PARTNERS.

Mr. Denis Burke-Collis, FRICS, chartered quantity surveyor of 25, Chester-street, London, SW1, and 9, West-parade, Lincoln, has taken Mr. BRIAN R. HISCOE, ARICS, chartered quantity surveyor, into partnership. The style of the firm has been changed to MESSRS. BURKE-COLLIS AND PARTNERS.

COMING EVENTS

FRIDAY, APRIL 24

VICTORIA AND ALBERT MUSEUM.—Exhibition of hand-made furniture. Geffrye Museum, Kingsland-road, E2. Open until June 20.

MONDAY, APRIL 27

FACULTY OF ARCHITECTS AND SURVEYORS AND FACULTY OF SURVEYORS OF ENGLAND.—Discussion on registration of surveyors Caxton Hall, Westminster, SW1. 6.30 p.m.

NATIONAL HOUSING AND TOWN PLANNING COUNCIL.—South Eastern Regional meeting. Town Hall, Tunbridge Wells. 10.30 a.m.

TUESDAY, APRIL 28

BRITISH COLOUR COUNCIL.—Ninth Designers' Conference. 13, Portman-square, W1. 8.30 a.m.

RIBA GOLFING SOCIETY.—Spring meeting. St. George's Hill Golf Club.

BUILDING ALLIANCE GOLFING SOCIETY.—Spring meeting. Berkshire Golf Club. Rounds commence from 9.15 a.m.

ROYAL SANITARY INSTITUTE.—Opening of Health Congress. White Rock Pavilion, Hastings. 11 a.m. Continuing until May 1.

LONDON REGIONAL JOINT APPRENTICESHIP COMMITTEE FOR THE BUILDING INDUSTRY.—Awards to apprentices to be distributed by Sir Luke Fawcett, OBE, president NFBTO. County Hall, Westminster Bridge, SE1. 7 p.m.

WEDNESDAY, APRIL 29

ARCHITECTURAL ASSOCIATION.—"British Architects in the Tropics," by Mr. G. Anthony Atkinson. 34, Bedford-square, WC1. 8 p.m.

VICTORIA AND ALBERT MUSEUM.—"The Arts and Crafts in Our Time," by Mr. Edward Barnsley, CBE. Geffrye Museum, Kingsland-road, E2. 6 p.m.

THURSDAY, APRIL 30

RICS (JUNIOR ORGANISATION QUANTITY SURVEYORS' COMMITTEE).—Debate on motion, "That this meeting considers that competitive tendering is not necessarily conducive to economic building." Talbot Restaurant, London Wall, EC2. 7.40 p.m. Dinner precedes at 6.30 p.m.

CHADWICK PUBLIC LECTURES.—"Public Health: A Comparison Between the Age of Chadwick and Our Own," by Professor S. E. Finer, MA. Walker Art Gallery, William Brown-street, Liverpool, 3. 7.30 p.m.

FRIDAY, MAY 1

ARCHITECTURAL ASSOCIATION.—A week-end excursion to Dublin. Returning on May 4.

INSTITUTION OF STRUCTURAL ENGINEERS.—Annual dinner. Dorchester Hotel, W1. 7.30.pm.

RIBA EXAMINATIONS

List of Successful Candidates

THE RIBA Examination in Professional Practice and Practical Experience was held in London and Edinburgh on April 13 and 14. Of the 224 candidates examined, 189 passed and 35 were relegated. The successful candidates are as follows:—

J. S. Ager, L. J. Allward, D. G. Andrews, D. W. Arnold, B. D. Atkinson, K. A. Ayton, K. W. C. Bacon, R. V. Banks, C. C. Barnes, P. A. Bartlett, R. G. Beattie, Leonard Beioley, Lawrence Bentley, M. Bieloszejew, C. J. Birtles, Iain Black, D. J. Blake, B. S. Bond, David Booth, M. P. Boots, D. D. Bridle, G. M. Britton, B. M. Broadbridge, John H. Brown, Margaret Brown.

Margaret F. Caesar, Malcolm Campin, Irma A. Carrick, Charles Carter, C. R. Cater, J. N. Chalkley, R. G. Chapman, K. H. D. Clark, C. A. Cornish, D. R. Craig, C. B. Cross, C. P. Darnton, J. F. Davies, A. B. Dodd, R. H. Dolan, R. B. Dowling, D. F. Drawbridge, F. J. Duley, I. A. Duncan.

P. S. Ednie, I. D. Elliott, D. G. Eve, H. C. Fallek, P. J. Farley, J. A. Fisher, Catherine A. Fortlage, J. C. W. Fulbeck, Sidney Gabrel, J. V. Gardner, G. C. Garrard, Pamela E. Gibbs, Roger Gill, B. J. Gillespie, W. J. Gilmour, G. R. Glenny, P. A. Golding, A. H. Goodwin, M. F. Goodwin, James Gordon, Margaret H. Gossling, P. F. Gray, Helen Grogan.

R. C. Hammond, J. W. Harper, P. M. Harper, E. H. Hartry, D. J. Heuvel, B. E. Hill, N. E. Hill, Denis Hindson, N. C. Hodgson, R. A. Huckle, C. G. Hughes, M. B. Hull, Maurice Hurst, Alan Ingram, G. A. K. Isted, Barbara A. James, Mary Jamouneau, D. R. Jefcoate, P. Korwin-Szymanowski, W. J. Krzyzanowski.

R. C. Lamb, J. E. Latham, W. L. Launchbury, D. B. Lawrence, D. G. Lawrence, E. L. Lewis, Arthur Lindsay, V. C. C. McCaughey, A. J. McLaren, John Malyan, P. D. Marsh, F. R. Marshall, R. P. Mason, F. M. Meisler, L. J. Michaels, James Michie, E. W. D. Mitchell, Wojciech Mlek, K. I. Morrice, Kenneth Morris, B. A. L. Mostyn, M. A. Munro, J. A. Murphy, P. H. Newham, J. H. Newman, N. F. Nind.

Doreen M. Oakley, C. D. Ogden, A. G. R. Ore, G. D. Owen, W. H. Owen, R. D. Owtram, J. A. Paddock, D. J. Pamplin, D. G. Parsey, N. V. Pearl, J. E. Penketh, E. F. Pickard, B. W. Pierpoint, A. F. Pollard, E. G. Priest, V. L. Rackham, William Ramsay, W. G. Reed, W. T. J. Rhys, Alex Richardson, Irene J. Richman, Christopher Riley, Norman Roberts, R. G. Robertson, R. G. Rogers W. H. H. Rogers B. H. Rossiter, R. E. Rowlatt, Arthur Rubinstein.

F. M. W. Schofield, Roy Sergeant, C. A. Sewell, E. L. Shepherd, J. V. Shilotri, C. E. Shinn, Arthur Short, D. C. K. Sim, D. C. Small, Douglas A. C. Smith, Matthew F. Smith, Stanislaw Spielrein, J. W. Stanworth, R. A. Staughton, K. J. Steel, S. J. Stoner, J. F. Sturdy, F. G. Swan, A. M. Taylor, B. H. Taylor, R. D. Thurman, Stewart Tod, A. R. Towlson, G. H. Trafford, Geoffrey Treadwell, W. R Trenbath.

John Vaughan, L. A. Wakeham, W. S. Walker, Alan Walmsley, D. W. Walton, J. C. C. Warren, B. W. Webb, J. T. Welch, B. P. F. White, P. J. Whittle, G. M. Wickens, D. G. Williams, J. W. Wilmot, Andrew Wilson, F. A. C. Wilson, K. I. Wilson, Joyce V. Wragg, Joyce B. Wray, P. B. Wright, J. F. Yeates, M. K. Zadziuk.

FROM "THE BUILDER" OF 1853

Saturday, April 23, 1853

THE LABOUR QUESTION.—The movement for advance of wages still extends, and other meetings and strikes have taken place besides those already noted, as in Bath, Bristol, Bridgwater, Haverfordwest, Kidderminster, Manchester, etc. At Bath, the carpenters and joiners are agitating for an increase of 6d. a day in their wages, and a considerable majority of the masters are reported to be ready to accede to the request, as have the master cabinet-makers, and employers in various other trades. The "Strike Committee of Carpenters and Joiners," at Bristol, have sent delegates to Haverfordwest to excite the workmen there to demand a rise of wages, and the navvies in that quarter have not only demanded a rise of 3d. a day and refused to work, but have proceeded to intimidate others inclined to do so. The ringleaders in this unlawful course were brought up before the magistrates.

COLLABORATIVE TRAINING OF ARCHITECTS AND BUILDERS

PUBLISHED below is a further selection of letters received on the subject of Collaborative Training of Architects and Builders, put forward in a leading article on April 10.

From Mr. D. A. G. Reid

To the Editor of *The Builder*

SIR,—The questions raised by your leading article of April 10 on this subject involve considerations fundamental to full-time courses of study. A full-time course in architecture should do much more for its students than provide technical instruction; in the case of University courses it has always been held that technical instruction must be a consideration secondary to the subjection of the students' minds to an academic discipline which will contribute greatly to their training and preparation for the type of career which offers opportunities for the exercise of the highest technical or administrative abilities.

Without necessarily assuming that all University courses conform to these requirements, it is certain that if full-time courses outside the Universities are to justify the expenditure of students' time, they must provide a mind-training discipline of the order already indicated. Amongst "vocational" type courses, the best of the full-time courses in architecture take a very high place when this criterion is applied. The students' minds are stimulated to work with originality and the average student who has completed such a course has both intelligence and culture.

There is good reason to suppose that an essential component of the present full-time course in architecture is the training in graphical expression and presentation which occupies a considerable part of the early years of the course. Until the student has developed a facility of expression in this manner, the amount of imaginative thinking done is severely restricted and those competent to judge have said that, for the majority of students, it is not until the latter part of the second year that progress accelerates. If the course were of the "sandwich" type, this training would be interrupted and the real benefits of the present type of architecture course would be seriously reduced. Since good full-time courses are not easily devised, alterations to the present architecture courses should be approached with caution. Five years is, however, very long for a continuous full-time course and a change after the end of the third year merits serious consideration. It may be said that this is the time when the student gains most from his studio work which, in a good school of architecture, can be more ambitious and stimulating than is generally possible in professional practice. On this account there is much to be said for making the Final Course a sandwich course with periods of six months in college and in practice alternately, rather than a part-time course allowing from six to ten hours' college study each week. Experience gained in the education and training of civil engineers encourages the belief that the young engineer benefits greatly from working for a contractor and the architect's case is sufficiently analagous for it to be suggested that any time spent in industry or practice prior to qualification could best be spent with a contractor.

Looking again at the circumstances which provoked the leading article, one is led to wonder why architectural education should be singled out as a cause of trouble. Two major deficiencies are observed in current building practice; first, a lack of accord between designer and constructor, second, an extremely slow rate of progress in technical development.

The designer-constructor difficulty arises from the system usually adopted for placing building contracts; it is to be noted that, in many minor respects, this system has already been abandoned and it seems likely that its hold could still further be loosened if technical advance accelerated sufficiently to give more variety to industrial practice. Certainly, if young architects made a practice of working for a period with contractors, it is likely that a sympathy would be engendered which would help to bridge the gulf at present existing between designer and contractor, but the establishment of this practice depends more upon a change in professional policy than upon a change in architectural education. It is, in fact, more likely to be helped by developments in building education which are already resulting in a larger number of contractors' staff being able to meet the architect on equal terms.

The problem of accelerating progress in technical development of building practice has many aspects, of which an important one is that building is still, to a considerable extent, an empirical technology rather than an applied science and that the results of research are not easily applied to empirical technologies. It is notable, however, that in certain respects building practice is advancing relatively rapidly and that, in those fields, the architect consults specialist designers and appoints specialist contractors under special conditions of contract. In fact, small-scale construction is the last section of building practice to attract the attention of the specialist designer and one wonders whether his advent is not overdue. But all this does not hinge on a change in architectural education unless it be that a distinction should be made between the education and training of the architect, the main designer and planner, the leader of the building team, and of the architect's assistant, which is all many of those to-day seeking architectural qualifications will ever be.

D. A. G. Reid, Principal,
LCC Brixton School of Building.
Ferndale-road, SW.

From Mr. David C. Burgess

To the Editor of *The Builder*

SIR,—Twenty-five years ago a well-known architect, now dead, said to me, "If I had a son, which unfortunately I have not, and I was intending to make him an architect, which I would not, I would insist on him working in a builder's office for five years so that he got the nonsense knocked out of him and his feet on the ground."

Ever since that time I have recalled that conversation and have pondered on its many sad facets. It has so often underlined my own feeling that through time the component parts of the building industry have become more and more isolated in their mental attitude and activities. There is but little that an architect should know that ought not also to be within the knowledge of a master builder, and surely the opposite is also true. Many would doubt that the present system of segregation of thought and being produces either better architects or better builders than Sir Christopher Wren, who was both.

In spite of modern developments, individuality remains a natural phenomenon in the human race, and it is certain that if those lads who are intended by their elders to become part of the executive team in the building industry were all educated together with one syllabus for the first few years, individuality would assert itself and segregation and specialisa-

THE AA RECEPTION. The Presidents of the Architectural Association and the RIBA, Mr. A. R. F. Anderson and (right) Mr. Howard Robertson, ARA, and their wives in happy mood at the AA Reception last week. *(See facing page.)*

" Pay no attention ! What with the cost of living and the state of Venice, Charles is not himself ! "

tion would take place spontaneously.

I would therefore go one further than Mr. Woodbine Parish. I would not have " architectural and building education more closely allied " : I would have it integrated so that no account would be taken of the particular destination of the student during the first few years until natural aptitude had asserted itself. By this means we could expect to find architects with originality of ideas not altogether " airy-fairy," and builders who could better appreciate " architectural feeling."

But under all circumstances let the students be taught to keep their feet on the ground wherever their heads may roam !

DAVID C. BURGESS
[MIOB, Past-President, LMBA].
34, Grosvenor-gardens, SW1.

OBITUARY

W. F. C. HOLDEN, MC, FRIBA

WE REGRET to announce the death, which occurred at Beaconsfield on April 18, of Mr. W. F. C. Holden, MC, FRIBA, formerly architect to the National Provincial Bank.

A. J. W. McINTOSH, MICE

WE REGRET to announce the death of Mr. Arthur John Whyte McIntosh, BSc, MICE, MIMechE, chief engineer to the New Town Development Corporation of Crawley, Sussex, which occurred suddenly on April 15. He was 53.

He was born and educated at Dundee, and worked first in the water engineer's department of the Dundee Corporation and afterwards with the city engineer of Cardiff and the borough engineer of Oldham. He then served with the Carlisle Corporation, being responsible for the design and construction of the Eden Bridge. In 1933 he went to Aberdeen as deputy to the city engineer and remained there until 1948.

In 1948 Mr. McIntosh was appointed chief engineer to the Crawley Development Corporation and, later, engineer of the Weir Wood Water Board formed in 1950.

THE TATE GALLERY CASE

" Political Prisoner " Man Conditionally Discharged

THE battered original model of the " Unknown Political Prisoner " was exhibited at London Sessions on April 17 when Laslo Szilvassy, 28, scenic designer, a stateless person, of Gloucester-place, London, N.W., pleaded guilty to damaging the model at the Tate Gallery on March 15, and guilty of failing to notify a change of occupation as an alien.

He was conditionally discharged to be of good behaviour for 12 months on each charge and ordered to pay £10 10s. costs.

Mr. Jeremy Hutchinson (prosecuting) said that in a statement Szilvassy said: " A distinction should be made at least between art and rubbish, and it is very regrettable the official judges have not the intelligence or courage to make this distinction."

Mr. Hutchinson said that the Institute of Contemporary Art had been criticised for prosecuting the man (himself having been a political prisoner) and bringing him to a higher court and keeping him in custody for the weeks he had been awaiting trial.

" As far as the Institute was concerned, they wished to have the case dealt with the day after the incident happened. It was only that Szilvassy himself expressed a wish to come to this court and be represented by counsel. The fact that he was kept in custody was a matter for the magistrate and two judges and had nothing to do with the Institute.

" I am instructed to say, as far as they are concerned, that they had absolutely no wish that this man, who has had an unhappy past, should in any way be held up as an example, or be treated in any harsh form."

Det.-Sgt. Albert Lisney said that Szilvassy was born in Hungary and had not been previously convicted. He had escaped from Hungary through Austria and came to Britain in July, 1948.

Mr. John Maude, QC (defending), said that there was no likelihood of a similar incident happening again. Szilvassy would not have been angered had not the sculpture been labelled the " Unknown Political Prisoner," which brought to mind the Unknown Soldier. " Apart from the title, it was an inept, witless contraption futile as a contribution to those who had suffered under the whip and concentration camp," he said. " It signified absolutely nothing to this young man, who had been under the heels of the Germans and others since he was a lad of 14. He told the police when arrested that he found it nothing more than a vulgar mockery."

Addressing Szilvassy, Mr. Anthony Hawke (chairman) said: " On the face of it this performance of yours is a bit of wicked, malicious, calculated hooliganism, which in the ordinary way would inevitably be dealt with by a long term of imprisonment. You have undoubtedly suffered much, and that is a matter which I think it is proper to take into consideration."

HOUSE NEAR WHIPSNADE

THE HOUSE near Whipsnade, Beds, designed by Messrs. Peter Dunham, Widdup and Harrison, and illustrated last week, was, we regret, wrongly described. It was built for Mr. and Dr. Behrens, and the contractor was Mr. F. G. Whitman, of Hudnall Common, Little Gaddesden, Herts.

CORRESPONDENCE

MOBILE CRANES FOR HOUSE BUILDING

To the Editor of *The Builder*

SIR,—From the two letters in your issue of April 10, from Mr. Rowley, City Engineer of Norwich, and Dr. Lea, Director of the Building Research Station, it would now appear that the claim for the saving of 1,000 man-hours is not a direct result of the employment of the use of a mobile crane. Dr. Lea says that it is the result of the use of the crane, together with effective site organisation and pre-planning. Mr. Rowley says that it is the difference between the man-hours employed on this particular exercise using a crane and houses previously built by his department without a crane.

Quite obviously both these statements can be correct if one assumes that in the first case any contractor would build without preorganisation; alternatively, if the man-hours employed are so high as to make it possible to save 1,000 out of probably something less than 3,000 man-hours, which is the normal total.

Again, according to Dr. Lea, the direct saving from the use of a crane from foundations to roof is 600 man-hours per house, or £50, which is either assessing the labour at 1s. 8d. per hour or, alternatively, the saving should be approximately £90 at an average rate of 3s.

Doubtless these points will be further clarified in the impending report, but the fact remains that 600 man-hours should be more than sufficient to build the shell of the type of house in view. Nevertheless, the desire for increased production or saving in cost, whether by the application of machine power or reduction in man-power, must continue to be a matter of paramount importance in the desire to reduce costs. I therefore refrain from further comment at this stage, and it is with interest and an open mind that I continue to look forward to the report.

HAROLD FORD, Managing Director,
Rexford (Builders), Ltd.
Shirley, Birmingham.

PAYMENT OF ACCOUNTS

To the Editor of *The Builder*

SIR,—The fact that the Borough Engineer and Surveyor of Gravesend considers it worthy of note that his Council make final payment on their house building contracts within four months of the end of the maintenance period, is surely a sad commentary on building accounting.

Under the RIBA form of contract as adapted for use by local authorities the final account should be measured and completed three months before the end of the maintenance period and final payment should be made on the expiration of the maintenance period.

The state of affairs where delays have become so habitual that a delay of four months is considered praiseworthy must surely have its reflection in the cost of building at the present time, especially in view of the present high interest rates.

E. M. CARROLL [FRICS].
Triangle Corner, East Sheen, SW14.

(*Correspondence continued on page* 651.)

Prefabricated Buildings for Export

A special supplement of "The Builder" illustrating nineteen prefabricated buildings for all purposes displayed at the British Industries Fair (Earls Court) in April, 1953. With special articles on markets and needs of New Zealand, South Africa and S. Rhodesia, Canada, Australia and USA.

NEW ZEALAND

A Field Offering Encouraging Possibilities

THE field for prefabricated industrial buildings in New Zealand though necessarily small in a country of only two million people, is capable of development, and well worth the attention of British "prefab" manufacturers. New Zealand's industries, while limited in range, are expanding rapidly, but their building programmes have been hampered by an acute local shortage of materials and of skilled labour that is likely to continue for years to come.

Over the past five years there has been little increase in New Zealand's building-trade labour force, yet the total labour force, especially in secondary industries, has grown steadily. The following table illustrates this :

LABOUR FORCE IN BUILDING CONSTRUCTION INDUSTRY (1,000s)

	1936	1939	1945	1948	1949	1950	1951	1952
Total, all industries ..	613	650	618	708	719	728	734	744
Secondary industries ..	154	187	191	222	227	233	235	241
Building and construction ..	37	56	39	46	47	48	48	51
Percentage of all industry ..	6.0	8.6	6.3	6.5	6.5	6.6	6.5	6.8

Immigration, a growing population, and increasing trade and prosperity have created housing needs in New Zealand that will long remain unsatisfied. These compete with industry for the inadequate local resources, and receive priority. Government policy, while not unfavourable generally to secondary industry, has had to place restrictions on commercial building.

Yet New Zealand needs far more consumer goods, especially of local manufacture, than she is now getting. In many cases the only drawback is the difficulty that private manufacturers have found in carrying out their construction programmes. In this they have to compete not only with housing schemes (including the major State projects), but also with a formidable list of public works hydro-electricity, saw-milling, paper-production, schools, railways, airfields, and so on. For New Zealand is essentially a "Welfare State," with a government committed to full employment and the undertaking of all manner of enterprises which other countries leave mostly to private business.

In such a picture, the chances for prefabricated buildings, whether for homes, institutions, or industry, look distinctly bright. The use of prefabs would, in fact, go a long way towards solving some of New Zealand's most pressing problems. And apart from distance there is no special difficulty in the path of British suppliers.

FAVOURABLE CLIMATE

New Zealand has, for example, no extremes of climate — cold, heat, or humidity — which might tell against the use of prefabs in industry, or call for special modifications. Erection can proceed in all seasons through the year, since New Zealand winters generally are not severe enough to restrict building work. Industrial conditions and practices there conform closely to those of Great Britain. New Zealanders, furthermore, are intensely pro-British, and give preference wherever possible to British products.

Unlike Australia, New Zealand has no objection to manufacturers sending out their own assembly teams for the on-site work of erection and installation. That, actually, is preferred, since it brings a welcome net addition to both labour and material supplies. One may also infer from Ministerial statements that New Zealand would favour the services of British ancillary work-teams for such jobs as site-preparation, foundations, plumbing and finishing in connection with prefabs.

As yet, however, this Dominion has not fully seized on the possibilities of prefabs, especially for industry. New Zealanders generally tend to be conservative, and to follow paths they know, even when those have become difficult. So there is a very real need for British manufacturers to "sell" the idea out there—to meet customers personally and convince them that prefabricated buildings will indeed provide the answer to many of their problems.

Most New Zealand industries are, by overseas standards, small. Since the Dominion lacks iron and other metals, her manufactures are mostly of the "light" class. In recent years, shortage of labour in the main centres has led to the opening of branch factories and workrooms in the smaller towns. All these conditions favour the use of prefabricated buildings.

The extent to which they will be used depends on (1) the ability of overseas manufacturers to supply units suited to New Zealand needs, (2) the promptness with which deliveries can be effected, and (3) comparative prices.

On the last point, New Zealand price trends for building materials should favour prefabs. From 1939 to 1950-51, general building materials there have shown an average increase of 70 per cent. in price, some as much as 300 per cent. For example, timber (general lines), advanced from £1 9s. to £2 14s. ; structural steel, from £11 to £14 per ton to £45 to £60 ; cement, from £4 8s. 3d. to £11 (average) per ton ; reinforced concrete buildings of equal size, from £10,000 to £25,000 ; and contract steel (supplied, fabricated and erected) at main centres, from £35 to £87 and in rural areas from £50 to £125 per ton.

Concerning the nature of New Zealand industries it should be noted that two semi-primary ones, viz., meat freezing and preserving, and the manufacture of dairy products, take about half of all materials (on a value basis) used in factories.

STATE PROJECTS

Besides these private industries, there is considerable scope for the use of prefabricated buildings (office blocks, store buildings, movable hutments, etc.) in the State developmental projects now going vigorously forward. For example, the New Zealand Ministry of Works recently announced an extensive schedule for the Wellington district. This includes development and extension of the Rongatai aerodrome (Wellington City) ; a city water-supply scheme including 36 miles of pipeline ; five railway bridges ; an administration building and two villas for the Porirua Mental Hospital ; a new post-office at Featherstone ; repairs and alterations to Parliament Building ; the construction of sub-stations for the State Hydro-electric Department.

The Ministry undertakes construction work of all kinds for nearly every government department, and for local bodies. It builds some 700 houses a year, prepares sites for schools, helps to construct railways. It should prove a useful go-between—and potential customer—for British manufacturers of prefabs. The City of Christchurch has always been keen to attract and assist private industry, and has a live and helpful public relations office. Auckland City and Province also have one. Outside the four main cities, Hamilton, Lower Hutt and Palmerston North offer perhaps the best prospects for British manufacturers with an eye to the future.

A. L. KIDSON.

SOUTH AFRICA & SOUTHERN RHODESIA

Need for Cheap Native Housing

THERE is intense interest throughout southern Africa in the centenary city that is being constructed at Bulawayo. The visit of the Queen Mother will set the seal on the Rhodes anniversary activities, and thousands of visitors are expected from as far north as Uganda and the Sudan, and as far west as Mossamedes.

I found an atmosphere of bustling progress in Southern Rhodesia. The boom town excitement of the north, with its copper belt, is absent, but every new settler seems brimful of vitality and optimism. Labour relations are, of course, much better than in the Union. The Rhodesians have their own ideas, but debates are carried on in a more moderate tone than across the Limpopo.

A TEMPORARY TOWN

Hundreds of "prefab" double-bedroom and bathroom units are being made, so that there will be somewhere for the visitors to stay. As it is, accommodation is a sticky problem everywhere, with new settlers and hordes of salesmen from all parts of Europe and Asia. Few hotels have accommodation for coloured drivers, and this has raised new difficulties.

When the exhibition that marks the centenary of Cecil Rhodes' birth is over, the visitors will be able to buy the housing units, complete with furniture and fittings, for a figure that will be around 100 gns. The 10 ft. by 12 ft. bedrooms are fitted with two separate divan beds, a portable wardrobe and wall shelves. There is a fine bathroom, with lavatory, bath, and hand basin. Hot and cold water is laid on to every unit, which is part of a 250-unit block. The blocks are going up as demands pour in, and they are more than expected.

To promote the needed expansion, the building industry in Southern Rhodesia agreed to continue the 42-hour week, the demand for the 40-hour week being shelved until the present house shortage is overcome.

Boom conditions north of the Zambesi have brought a fresh shortage of labour, as many building trade workers found they could earn £20 a week in new jobs. The conditions in some of the newer settlements resemble those of the Wild West in the 'eighties of last century. Quick fortunes have been made, and there is bad blood between the older settlers and some of the European D.P.s who have established thriving rackets.

Salisbury, the capital city of Southern Rhodesia, has the most pressing housing problem, as of the 75,000 natives in the district, only 45,000 are housed by their employers or in the city limits. About 30,000 Africans are in shacktowns or temporary dwellings provided by the whites. Another complication is that many of the Africans would like to bring in their wives and children from the reserves, often far away. It is only natural, and to deny them is to make more trouble, and encourage the criminal elements.

The hostel system is now well established out there, and works well. These hostels are little villages, with big rooms for four people, communal dining-rooms, recreation halls, and shops. Cinema shows are available, and the tribal organisation has broken down, as men are sent to hostels by job card, not membership of a tribe. In this way the younger men are ceasing to think in terms of tribe and chiefs, but are becoming part of the growing working class, with European clothes and habits, and new demands.

Outside the cities the employer is responsible for housing his workers. Many of the dwellings are of a good type, especially considering the difficulty of transport and lack of materials. Brick houses are frequent, with corrugated iron, asbestos, or thatched roofing. 100,000 Africans are living in this way, and seem content. There is no doubt that the traditional pole and daub hut is on its way out, as the Africans who go back to the reserves to find a wife take with them new ideas and higher standards. A man who has not been to a big city or on a white-run farm is no longer considered eligible by the girls. A job has taken the place of initiation ceremonies, hunting and war; a real revolution in outlook, as until recently most Bantus considered work beneath their dignity.

Community demonstrators, white and coloured, teach erection methods, and train artisans. At the moment 1,500 men are in training in Southern Rhodesia on these lines.

CONDITIONS IN THE UNION

In the Union of South Africa there is a shortage, according to the Department of Native Affairs, of 167,000 native houses. It has been calculated that a further 18,000 houses a year will be needed for the next ten years, besides the present shortage figure. This means that it will be necessary to build about 35,000 houses a year at a cost of £10m. This is all very well on paper, but last year only 8,000 houses were built for natives—more than half of these by the Africans themselves.

The agitators who keep referring to the shacktowns of the Africans never touch practical matters. Here is one instance from Johannesburg. Everyone agrees that the city has a desperate problem in overcrowding. There is a need for 50,000 houses for the native workers. Only 78 houses were built in 1951, while the recently approved scheme for 1,000 houses at Orlando will take many months to put through. But 4,500 natives come to Johannesburg every month, and about 250 men settle down permanently every week. This means there is a need for 12,000 houses a year in the new suburbs. This will cost £5m. a year. Of this amount only a fifth would be given by the Government, and the rest would fall on the rates. The ratepayers of the city would naturally object to paying another £1 a week average on their rates, for "native welfare," as they call it. What is the answer? It is hopeless to argue with the irascible Jo'burgers, who often say "If the natives want houses, let them build them. My grandfather had to build his with his own hands." The solution seems to be larger Government support.

Unstable housing conditions affect the mobility of labour. Capetown employers told me that their houseless workers change jobs twice as often as those who are settled with families. It is only common-sense. Common-sense, however, is a rare quality in Africa, south of the Equator, where the voice of compromise is rarely heard.

The scientists are concentrating on cheaper materials as a possible answer. Native houses can now be produced for £200 and less. At the Kwa-Thema native township at Springs there are terrace houses, consisting of three-room units, with a large lavatory, and these cost only £190 each.

Unorthodox construction methods are being tried out, but not on a planned basis of research or report. The South Africans have not taken kindly to European methods of "controlled experiments" in housing. Any kind of Government interference is criticised. When I was in the

Two new buildings in Capetown. A view (left) of the Grand Hotel, which has just been completed and (right) Capetown's newest office block now under construction, as it appeared in January, 1953.

backveld, north of the Orange River, I found that in a Government survey one-third of the people approached ignored the officials and their forms! Nor will any action be taken against the offenders—this is too costly a business, while local magistrates interpret laws within wide limits. A Boer farmer of the old school, ordered to pull down a building he had erected, would probably get his rifle down and organise a commando—a lot of them are still trigger-happy. At Rehoboth the local settlers still claim their independence from the Government, and there have been many law-suits about it!

AMERICAN INFLUENCE

The new buildings in Johannesburg are reminiscent of big American cities, and there is a strong demand from middle-class housewives for Hollywood-style kitchens. The new Grand Hotel in Capetown, just opened, has ice-water laid on to every room and many familiar American-style services. Durban buildings show more of a British style, but there is a feeling in the air that European methods are old-fashioned, and the younger men are gadget-conscious to a degree.

Big native housing schemes have been proposed, but will have to wait until after the elections. These plans involve an elimination or diminution of foundations, thinner walls and floors, standardised doorframes and windows, and concrete roofs. Materials account for 70 per cent. of housing costs in the Union, and it has been suggested that centralised buying would mean a reduction. Opinions on this point are sharply divided. An unfortunate result of the riots last winter in Port Elizabeth was the murder of four Europeans in the best native housing district. A typical comment was "What's the use of doing anything for them? They only spit in your eye."

BUILDING PROSPERITY

Generally speaking, the building industry in the Union has never known such prosperity. There is full employment. At the beginning of 1953 there were only 250 unemployed artisans in the whole country. £81m. was spent last year in the town areas, and this was a record. The figure has been rising steadily since 1945. Building trade employees number 20 per cent. of the entire labour force. The country is short of 4,000 artisans. Costs are comparatively low, despite the fall of efficiency since pre-war days. Figures I saw suggested a reduction of efficiency per man in some sections of 15 to 18 per cent. Overtime bonuses have been suggested as the solution. The idea in Europe that coloured labour was of very poor quality was not borne out by examination. In the cities the Africans are now a permanent labour force, and have mastered many skills thought beyond them a decade ago. Whenever politics are forgotten, labour relations are excellent, and there is always respect for a white boss who knows his job and treats his men firmly but justly.

A few speculative builders went in for gambles in certain districts after 1945, and they have gone bankrupt, but these were exceptions. Flats and factories doubled in the newer towns since 1945, and although private dwelling plans sank in average number for a time, they are now coming back into popularity. Timber prospects are good, when considered over a long term. The great resources of Northern Rhodesia are now being made available, and there are mighty afforestation plans for the Union itself. Cement production doubled in South Africa between 1941 and 1951, but there was a shortage of 370,000 tons last year.

The future seems to lie with cheap native housing, lower-priced flats for the whites, and "motels." Race discrimination means that many whites are not allowed to do jobs they know, and this means higher costs. The bar against natives doing skilled trade work, despite their efficiency, can have no good results. I am surprised that labour relations are as good as they are, in view of some of the things I saw. But a lot has been done to improve the condition of the Bantu. In many reserves house stands are sold for £10 each, this sum covering only capital services such as sanitation and water supplies. The land is really given free, and building material sold to the natives at cost, often on long-term loan schemes. It is up to the natives to do something for themselves, with such advantages. The native "purchase areas" are seen at their best in the Rhodesias, where one can even discern the beginnings of an African trading and commercial class. But things must not be rushed in Africa. Whenever they are, governments burn their fingers,

JOHN BROWN.

CANADA: Prefabricated Buildings for Industry

THE Minister of Works has said he would like to see British enterprise prepared to build and equip a complete prefabricated town anywhere from the sub-Arctic to the Equator. As far as Canada is concerned, Mr. David Eccles' vision seems to be no mere groundless dream.

Although this country would be the toughest market in the world in which to initiate such an enterprise, it could develop into the most rewarding; and, more perhaps than any other possible market, it has the present need, backed up by the financial ability to satisfy it. Canada's booming development of her resources and the joint USA-Canada sub-Arctic defence build-up both call for complete new communities in raw and often inaccessible territory. The fast-growing population in the narrow inhabited belt along the USA border needs homes to house it and industrial buildings to employ it and to serve it. The armed forces require not only new camps and air bases but also stockpiles of portable buildings. These are the three principal fields offering possibilities for prefabricated, or at least for "packaged" buildings requiring a minimum of on-site labour in erection. In an alluring volume, these possibilities are made probabilities by the failure of Canada's conventional building industry to produce suitable designs in sufficient quantity, in reasonable time, and at realistic prices.

At least four British builders of prefabricated homes have prospected and tested the Canadian market and laid bare the problems facing the British exporter in this field. Such thorough examination of the market for prefabricated buildings for industrial uses has not yet been made.

Two of the difficulties encountered by these experimental shipments of houses would apply equally to the prefab building. These are:—

(i) the high cost of local work incidental to the erection of the packaged house; and

(ii) the Canadian winter, necessitating modifications adding at least 25 per cent. to the material needed for the same house in a balmier climate such as, for instance, that of Sussex.

FRAMELESS BUILDINGS

The large prefabricated building has a versatility which is already finding varied use in Canada. Three or four Canadian and American manufacturers have in a small way launched the "cold war" equivalent of the Nissen hut, in the form of steel-frame prefabricated buildings and packaged frameless square sheds. The most imaginative of these frameless buildings stands 160 ft. by 28 ft., with vertical walls and pitched roof. It is constructed of panels of galvanised steel 12 ft. long and 16 ins. wide, with tongued edges shaped to interlock. These are erected vertical, to form a wall span self-supporting up to 60 ft. For greater lengths they need a wind-brace. These same panels form the roof with its 1 in 4 pitch.

Steel prefabs, normally 72 ft. by 24 ft., of another pattern built on frames are claimed to have the great advantage of being easily increased in size by the addition of 24 ft. square sections. Pulp and paper companies, often operating in virgin forest and far from a pool of building labour, find prefab buildings useful for adaptation as living accommodation, offices and stores. The prefab has arrived at the psychological moment, when the bushworker has become a "softie" unwilling to live in a shack made of logs felled and fitted by his own hand. Remote northern mining camps are similarly swinging to the prefabricated (but not preassembled) building which can, if necessary, be air-freighted into the site.

These industrial-size prefabs are not only held in mobilisation stores by the Canadian army and air force; they are also being used as married quarters, barracks, schools and storage warehouses. They can be seen at appropriately named Snag, in the Yukon, which holds North America's record for low temperature at 115 degrees of frost Fahrenheit. They can be seen equally habitable and equally comfortable at centrally located flying schools such as Gimli, where British air-crew trainees are living in them.

The 160 ft. by 28 ft. building, ideal size for service garage or warehouse, is also being used as married quarters.

For this purpose it is divided into two apartments, one with two bedrooms and the other with three. In the event of mobilisation, this would be readily convertible into barracks. When this building has to be heated, either to accommodate stores which must not freeze or for use as living quarters, it is lined with plasterboard or other dry-wall construction ; rockwool batts or similar insulation are placed between the outer steel panels and the inner plasterboard. Heating can be provided by an oil-fired furnace from which hot air is fan-forced through overhead ducts.

ARMED FORCES' REQUIREMENTS

The armed forces, who are the chief pioneer users of these prefabricated industrial-type buildings here to date, list these advantages learned in their limited experience :—

(i) their ready availability ;

(ii) less on-site labour is required to erect one of these than to build a conventional-type building, so the user is not dependent upon local labour supplies ;

(iii) such on-site labour as is required for erection need not possess any building skills ; experience shows that able-bodied men can be taught to erect these buildings in a few hours, thus sidestepping the famine of tradesmen often experienced locally in a rapidly expanding economy such as this ;

(iv) the customer gets a packaged unit of predetermined standard. Thus the advantage of buying brand-name goods is extended into a field where contractors' standards vary almost without exception from the over-praised to the over-priced ;

(v) these buildings are at least partially salvageable if they become superfluous in their existing location ;

(vi) they can be stock-piled, which is an overwhelming advantage ;

(vii) not a single ounce of superfluous material has to be transported to the desired site, as would be the case if the building were to be constructed conventionally.

One interesting development of the use of prefabricated buildings by the armed forces is that their engineers have perfected a construction technique eliminating the basement. Canada's severe winter climate, common to the whole country except the southern parts of the Atlantic and Pacific coastline, causes frost to penetrate as much as 3 ft. into the ground throughout several months of the year in southern areas. In the north, of course, the subsoil never thaws. This frost makes the surface of the ground heave, so the foundations of any building must go below the frost-line. Winter's sub-zero temperatures also make a central heating furnace a " must." The usual oil-burning hot-air system is most satisfactorily operated by a furnace placed beneath the house, so the 4-ft.-deep foundations are normally elaborated into a full basement with floor level five feet beneath the ground.

ALTERNATIVE TO BASEMENT

This method of construction is obviously impossible in the speedy erection of temporary camps where prefabs are merely cold-weather tents. So as an alternative to a basement, the forces have devised a concrete slab foundation laid on the surface of the ground. First the surface must be levelled. Then a 12-in. mat of gravel is laid. On to this is poured a 2-in. slab of concrete, on which is laid a 2-in. blanket of stiff insulation such as cork, fibreglass or plasterboard. To complete this sandwich a 2 in. slab of concrete is poured on top. Experience has shown that enough heat is lost from the building down through this flooring and thence out beneath its edges to prevent frost getting under and thus causing heaving.

This construction does not require the labour and equipment involved in excavating a basement. But it saves only about $400 in initial cost, and causes some floor space to be detracted from the living quarters to house the furnace. On balance the full basement is worth the extra cost for a domestic building in a settled southern community.

H. Newsum, Sons and Co., of Lincoln, sold 24 of their prefabricated houses for erection at Gander airport, in Newfoundland. These are said to cost about $4,000 per unit in England. They cost $4,547 each f.o.b. Gander. On top of that, on-site work carried out by the Canadian contractor who erected and installed them totalled a staggering $7,955 per unit, bringing the completed cost to $12,502 each (with the Canadian dollar at 2.75 to the £1, this is the equivalent of £4,546).

This heavy erection cost was explained to me by officials of the Crown Corporation, Central Mortgage and Housing Corporation, which has itself erected and tested some British prefabs and tentatively approved them as meeting the building specifications laid down by Canada's National Housing Act. The British, prefab housing " package," they say contains about ⅔ of the material and labour needed for the finished house. The severe winter, they point out, necessitates the preparation of a basement to carry the house ; also the addition of a porch outside the front door and the back door, with an airtight-fitting outer door enclosing sufficient space for three or four persons to stand, so that the house is never opened direct to the cold outside air.

These special Canadian costs, not experienced in Britain, in connection with erecting a prefab three-bedroom bungalow type home, add up like this :

	$
Excavating basement	200
Foundation, cement floor and cement block walls for basement	1,300
Wooden stairway from basement	35
Furnace and air ducts, coal burning $600, oil burning	800
Sub-floor and joists	250
Plumbing below sub-floor and supplying twin laundry tubs, hot-water tank and electric water heater	300
Porch, front and back	250
	$3,135

To this must be added normal installation costs :

	$
Erecting house	600 or 700
Supply and wiring of electrical installation	300 to 375
Laying floor and finishing	90 to 100
Taping and painting interior walls, woodwork and exterior walls	800 to 900
	$2,075

So the cost to the Canadian buyer, in addition to the laid down price of the packaged house, will be about $5,210.

Two types of British prefab which have been carefully examined by the CMHC here are the Riley-Newsum K2 two-bedroom bungalow and the K4 three-bedroom bungalow. CMHC itself has designed a two-bedroom bungalow, known as the " B," very similar to the K2 but 30 sq. ft. smaller. This costs about $7,200 for the bare house finished ; that is, excluding the cost of the building lot and surrounding garden area, the cost of installing water and sewer if it is unserviced land, and the cost of constructing driveway and paths, and of grassing and landscaping the garden.

INSTALLATION COSTS

With installation costs running at above $5,000 for the K2, as shown above, the packaged prefab must be delivered at site in Canada at $2,200 or less if it is to compete with the conventional type B bungalow at $7,200. This delivered cost of the K2 or similar British prefab must include packaging, freight, insurance and Canadian customs averaging about 17½ per cent. (less 10 per cent. if shipped direct to a Canadian port). In fact, the landed price is considerably higher.

While admitting that the on-site costs at Gander were exceptionally high, the exporter of British prefabs must recognise that hurdles are contained within the Canadian building industry. To overcome these, at least one British firm has sent its own erection crews to Canada.

This country's building force is by common consent to-day doing a poorer job for more money than any other class of labour. From the 1935-1939 average index of 100, the construction worker's wage index has risen to 239.4 to-day ; the composite index of all construction materials to 283.7 ; the composite index of residential building materials and wage rates to 261.8. By comparison, the cost-of-living index has risen to 184.7. Average weekly earnings in the building trades are now £22 per week, while highly paid tradesmen receive 16s. 6d. per hour for their 40-hour week — at which level painters, for example, have priced themselves out of redecoration work and converted the average Canadian home-owner this spring into an amateur " sprucer-upper " armed with a " roller-coater " paint spreader.

Last year, expenditure on new home construction ran at approximately 200 per cent. of the 1946 figure of $412,000,000 ; but the number of dwelling units completed was 105 per cent. of the 1946 total of 67,194. The respective numbers of dwelling units started coincided with these two figures.

These costs amount to banditry when practised upon Canadians. British exporters may not without reason regard them as akin to sabotage of their dollar-earning efforts. To be fair to the Canadian contractor asked to erect prefabs, however, it must be explained that this industry is so young that he has not yet learned that he can quadruple the number of houses he finishes and thus afford to take a smaller per unit profit. He is accustomed to making a profit on every piece of material that goes into the house he builds and so when faced with a prefab he is in the same frame of mind as your tailor would be if you supplied a bolt of tweed and asked him to make it up into a suit.

British exporters of prefab houses have made representations here against the Canadian tariff, requesting a reduction below the present 17½ per cent. levy. If it were reduced, then, of course, the most favoured nation tariff applying to USA prefabs would have to be equally reduced, as under GATT, Canada is pledged not to widen any existing preferential margins.

As a counter proposal, it has been suggested that British prefabbers should open branch factories in Canada, to take advantage of her plentiful supplies of raw materials and to economise on the long-freight haul.

There is nothing to indicate that the Canadian market for industrial prefabricated buildings is any different from any other market here, namely, competitive, critical and complex. It is, however, a definite market, rich, virgin and attractive enough to be worth courting. The formula for success probably follows that established by Henry Ford for the North-American car, namely, a strong product designed and equipped from the drawing-board stage to entail the minimum of servicing, a high safety factor and a low performance factor.

PATRICK NICHOLSON.
(*Ottawa, Canada*).

AUSTRALIA: Large-scale Export Opportunities

MANY factors combine to make the Australian market for prefabricated buildings, industrial or otherwise, extremely difficult to assess. First, it must be remembered that Australia is a continent, roughly 30 times the size of Britain. Thus its range of climates, from equatorial to sub-antarctic (Australia controls some two and a half million square miles of actual Antarctic Territory, and specially made prefabs have already gone there), tends to limit the usefulness of standard-type precut buildings, especially from abroad.

Another difficulty is that of on-site temperature extremes ranging in some districts from 120 degrees in the daytime to below freezing-point at night. In addition to these problems of climate, Australia has presented in recent years a picture of rapid and drastic changes in Government policy regarding imports, immigration, control of building materials, and the availability of finance; all of which have a very marked effect upon the local building trade and on the chances for imported prefabs.

Prior to 1950 very few of any kind were imported. Then the Australian Government, concerned at the lag in its housing and developmental programmes, some of which are on quite a vast scale, placed large orders overseas. An acute local shortage of men and materials made it expedient to obtain the necessary buildings from almost any source without too much regard for costs. At that time also trade and money conditions were extremely buoyant, and Australia had large sterling credits abroad. Imports from Britain were virtually uncontrolled.

IMPORTATIONS OF PREFABRICATED BUILDINGS

(Mostly from the UK)

1950-51	Number	Value
Houses	4,500	£4½m.
Other buildings	4,149	£3m.
1951-52		
Houses	8,300	£8.8m.
Other buildings	4,723	£5.7m.

By the end of 1951 Australia had used up her large overseas credits and was "in the red" to the tune of several hundred millions. Import controls were clamped down, bank credits restricted. State projects, relying on Commonwealth funds which did not materialise, were tapered off, or ceased altogether. Where a year before there had been shortages of labour and materials, there was now an abundance of both; but the streams of finance had dried up. By the end of 1952 the local building trade was in the doldrums. And a promising "sellers' market" for British prefabs had largely faded out.

That, in brief, is the picture to-day, but there are other and brighter aspects. Overseas funds are piling up again. Local unemployment is lessening. Import restrictions have been eased. But they still apply to prefabricated buildings. The importer must obtain a permit from the Central Import Licensing Branch of the Commonwealth Customs Department. Duty and primage total 27½ per cent. on wooden or aluminium prefabs from British sources. If the building becomes the property of the *Federal* Government (not that of a State, or a local authority) at the time of importation, Customs duty may be waived.

Despite all these obstacles, and the competition of local builders, who can now take advantage of the time factor, i.e., construct a building quicker than one could be ordered and imported from abroad, one British firm already selling prefabs. in Australia reports that industry there does offer a field for imported buildings of certain types and of certain spans and ceiling heights. The likeliest kinds, this firm concludes, are single-storey units of aluminium or other light metal alloys. While these cannot compete in cost with locally made wooden buildings, their portability, durability and high "recovery value" give them an advantage. So also do their resistance to damp, and to the attacks of borer ants, and other insects.

Such imported prefabs are cheaper than locally built units of similar size in brick or concrete. They are already being used in Australia as industrial hostels, administration and drawing offices, store buildings, and complete factory-and-office blocks. They are ideal for housing such operations as radio, clock and instrument-making, since they are dust-proof, and lend themselves to the control of temperature and moisture. Their use in Australia could extend also to the manufacture of textiles, all types of light engineering, and to certain medium-heavy industries such as motor and cycle assembly.

There seems little future in Australia for multi-storeyed prefabs or for imported steel-frame structures. Two years ago the Commonwealth imported £90m. worth of steel at higher than local prices. To-day, her own steel industry can supply all domestic needs, with a surplus for export. Before the war, in fact, Australian steel was well able to compete on a cost basis with that produced elsewhere, and only the abnormal post-war demands have led to importations of this commodity.

AVAILABILITY OF TIMBER

Regarding the availability of timber in Australia, an important factor in the possibilities for prefabs, the position is not nearly so clear. In the past 12 months the market has changed dramatically from one that had been for a long period under-supplied, to one that is now over-supplied. This change has been caused by heavy importations from overseas together with a big increase in local production, and a falling-off in demand, largely due to credit restrictions, but in part also to buyers' resistance to high prices.

How long this over-supply will continue remains to be seen. The position could be altered quite quickly by (*a*) a change in government financial policy easing the present restrictions on credit and allocating more funds for State developmental projects; (*b*) a return to former rates of immigration (with consequent added demands for housing, schools, etc.); (*c*) the cumulative effects of present import restrictions; (*d*) falling timber prices, tending to force out of business many "mushroom" milling ventures dependent for their existence on high prices.

Behind all these shifting and uncertain elements stands the remarkably solid and well-based structure of Australian industry. That offers real hope for the British exporter of industrial prefabs; and he may be surprised, when he studies them, to find just how dynamic and extensive Australia's industries actually are. They cover practically the whole field of manufacturing. Their work-force now numbers close on a million. Their plans for expansion, and their capacity to expand, are tremendous.

A concise account of these, entitled "A Century of Industrial Progress," was issued by the Commonwealth Department of National Development in December, 1952, and is well worth studying. It tells, for example, of projects that will within the next few years double Australia's capacity to win brown coal; provide a 50 per cent. increase in the capacity to win black coal; a 45 per cent. increase in iron-making capacity; the doubling of paper

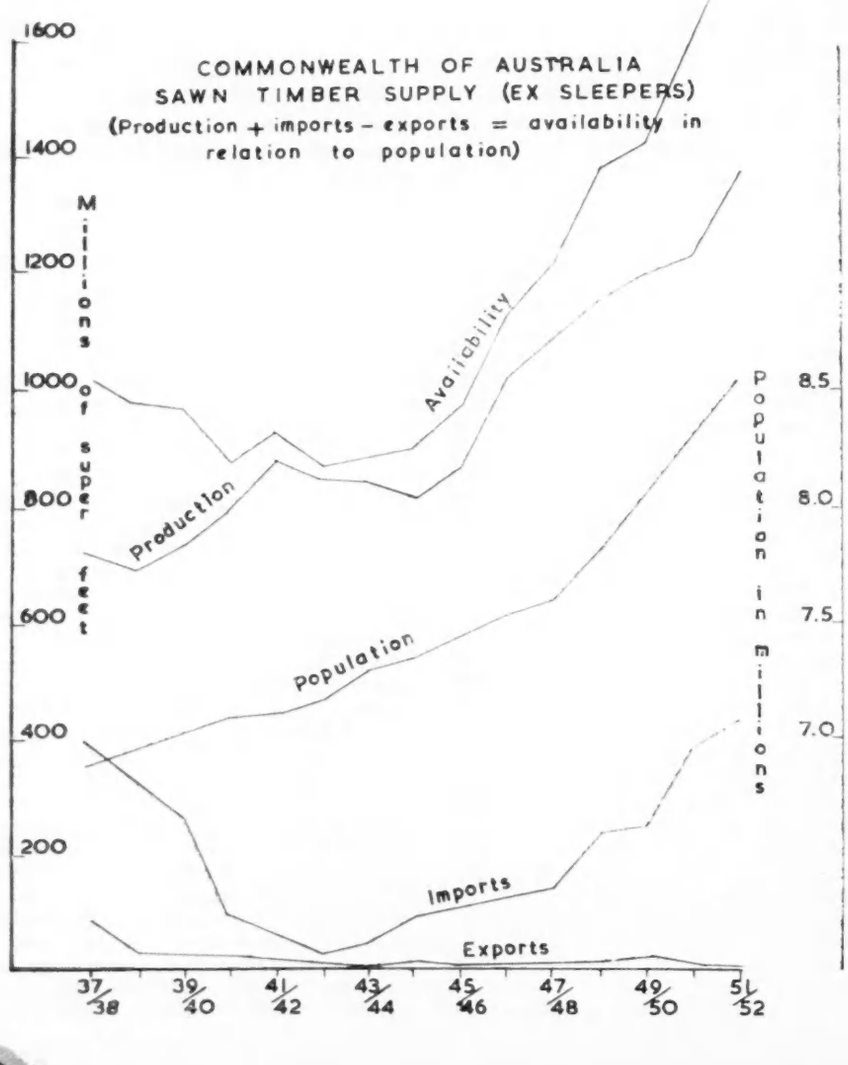
and paper-board products ; a 25 per cent. increase in refined lead production ; a similar increase for refined zinc ; a 50 per cent. increase in cement-making ; the doubling of capacity to make alkalis ; and a seven-fold increase in petroleum refining. Local production of copper will be increased by over 100 per cent.; aluminium is to be produced in quantities commensurate with local requirements and rayon yarn will be manufactured for the first time. All this presages a very active demand for industrial buildings.

Since the war, 270 overseas firms have established themselves in Australia, either on their own account or in conjunction with existing Australian industries. Two hundred of them were entirely new ventures. Since June, 1951, they have announced plans involving an expenditure of over £100m., more than half of it by UK firms, most of the balance from the United States. Their products range from medicinal goods, cosmetics, crockery, clocks, toys, clothing, and processed foods, to textiles, building materials, heavy castings and forgings, fork-lift trucks, motor-cars and trucks, tractors, earth-moving equipment, diesel and electric locomotives, titanium oxide pigments, and industrial diamonds.

This confidence shown by overseas investors provides a very strong clue to the general health and vigour of Australian industry and to the prospects for ancillary suppliers, e.g., of prefabricated buildings. As the big expansion programmes get under way, there is little doubt that they will take up all the present slack in the local building trade. Nor can the government of the day continue much longer to ignore the increasing clamour in Australia for more schools, houses, hospitals, etc., all of which have fallen behind current requirements through lack of finance. The whole stage seems set for a return to the "sellers' market" for buildings which existed around 1950.

AUSTRALIA'S ECONOMIC FUTURE

In case the impression still lingers, and the recent Prime Ministers' Conference in London may have strengthened it, that Australia's economic future rests solely on her primary industries and that she comprises some sort of vast undeveloped hinterland fit only to produce wool and foodstuffs, here are some further facts : In 1951–52 Australian exports of processed goods, excluding processed foodstuffs, fats and waxes, and scoured and carbonised wool, aggregated about £82m. in a total export (excluding precious metals) of £666m. or about one-eighth of the total. Exports of processed foodstuffs totalled £50m. of flour, £33m., scoured and carbonised wool, £45m., and fats and waxes, £4.3m.—in all about £132m. Thus in that year about one-third of Australia's total income, excluding precious metals, came from the export of processed products. When wool prices return to more normal levels this proportion will be considerably higher.



In the past, the Commonwealth Government, mainly through its Department of Works, has provided a market for British prefabs, and should do so again when the local supply position changes. This Department has imported about 4,000 wooden houses of approximately 11 squares (1,100 sq. ft. floor-space), and a considerable number of hangar-type prefabs., besides functional buildings such as line depots, stores, etc., for Post and Telegraph operations, electricity supply, and so on. It now reports that owing to the greater availability of local materials and labour it has placed no overseas orders lately, and does not contemplate doing so in the immediate future.

Several government departments extend facilities, and expert services of various kinds, to industry in Australia, and the co-operation of these could be enlisted. For example, the Commonwealth Scientific and Industrial Research Organisation has a Building Research Division at Graham-road, Highett, Victoria, which would no doubt be willing to assist British manufacturers of prefabs to overcome any problems they may have in adapting their structures to meet local conditions. The Industrial Welfare Division of the Department of Labour and National Service (125, Swanston-street, Melbourne) exists to promote efficiency, safety and health in Australian industry. It conducts, surveys and issues sets of data sheets covering such aspects as lighting, ventilation, colour treatment, heating, etc. These sheets recommend practices which relate to recognised local needs, and which conform to Australian conditions.

One set of particular interest to makers of industrial prefabs deals with the architectural control of sunlight penetration. In Australia, where more than one-third of the total area lies within the tropics, this is a matter of much importance. The data sheets, supplied at a nominal cost, provide a wealth of information relating directly to the problems created by sunlight in Australian industry, and they describe, with profuse illustrations, a variety of architectural and structural devices for securing adequate control. Supplied with the sheets are sun position diagrams for Brisbane, Sydney, Melbourne, Adelaide, Perth and Hobart ; screening assessments, with instructions for their use, for all those cities except Perth and Hobart ; and two specially designed sunbreak protractors, with instructions for their use.

For a final word on the difficulties likely to be encountered by British suppliers in this field, the following points have been made by operators already there :—

Unloading at Wharves : No longer subject to excessive delays ; handling reasonably careful, but some damage to crates and contents reported.

Storage (Wharf to Site) : This has created problems, mainly due to the size

of crates, both in transit and on site. Storage difficulties are liable to cause deterioration in wooden units, e.g., through warping, by continued exposure to hot sun and other weather conditions. This applies specially to "green" timber buildings.

Liaison with Local Erecting Contractor: Has sometimes proved difficult; firms providing their own site-liaison service have an advantage here. Erection gangs "imported" with the prefabs are not favoured by the Australian authorities.

In General: The main problem will be to convince Australian architects that prefabricated buildings can serve their clients' needs, both aesthetic and utilitarian, more quickly and cheaply than similar-sized structures made from local materials. In this the British supplier will be assisted by Australia's high labour costs, and by what Australian architects have called a "pick-and-shovel outlook" in the local building industry.

In 1940, on-site labour represented 25 per cent. of the cost of an Australian building, and materials 75 per cent. That ratio has been almost completely reversed, and stands now at 65 and 35 per cent. respectively. And, the architects point out, that labour is still being used as it was 50 years ago; some firms have excellent plants, but generally the industry is not mechanised, and work not as well organised as it should be.

A. L. KIDSON.

PREFABRICATION FOR THE USA

A Difficult but Rewarding Market

FOR British firms to sell prefabricated houses in the United States of America may seem to be a wholly visionary concept; so far removed from reality as to be more suitable for treatment in the columns of *Punch* than in the sober pages of *The Builder*.

Nevertheless, there is nothing more improbable in this idea than in selling British motor-cars in the USA—a proposal which in pre-war days would have been received with at least as great an incredulity, but which in practice has been proved to be triumphantly successful. What is more, in this matter of housing the facts are against the disbelievers. One British firm already has a prototype erected in New York State, and at least one other includes in its range of prefabricated structures a Californian house. It is evident that these firms, before embarking on so definite a programme, have been satisfied—presumably by market research—that, for them at least, there is more than the mere possibility of doing business.

On the face of things, it seems clear that there is nothing inherently impossible in our manufacture of prefabricated buildings for sale to our American cousins. To make this possibility actual fact is, however, a process in which many obstacles and pitfalls will be encountered; it is the purpose of this article to reveal at least the larger of these "snags."

THE PRODUCT

What type of house have we to provide for the American market? We may begin by noting that 80 per cent. of the houses built in the States to-day are of timber construction. Two architectural styles hold the field, called Colonial and "conservative modern." The former needs little description: it is derived from our own Georgian, and its details may be studied in a number of works readily available in this country. It is usually—but not invariably—a two-storey structure, and more nearly conforms to our English house. It falls in the "middle-" and "high-cost" groups.

The "conservative modern" house, which includes all those in the "low-cost" group, and many others in higher price ranges is a single-storey building. It is important to realise that all houses generally have the same type of wooden construction: "Colonial" or "conservative modern" being largely a matter of the details, such as doors, windows, "trim" and floor treatment. The planning is all but always "open," because all American houses are centrally heated, often by gravity-warm air. The formerly universal basement and ground floor of boards on joists have largely given way, on the score of cost, to a concrete ground floor and foundation slab, sometimes incorporating floor-heating, with a finish of parquet or thermoplastic tiles. The structure is a timber framework, of 2 in. by 4 in. stuff, sheathed externally with diagonal boarding or heavy insulating fibreboard, and covered with prepared featheredge boarding (there called "siding") or (a recent tendency) with asbestos-cement "siding" or shingles of cedar or asbestos cement, nailed to the insulation board by ingenious self-clenching nails. Insulating material in block or strip form, precut to width with vapour barrier incorporated, is usually fixed between the studs. The internal wall finish is plasterboard, often with moulded edges and in plank widths, or "knotty pine" matchboarding or plywood. Roof pitches are low (35 deg. is usual) and roofs are sheathed, either with boarding or plywood, and covered with wooden shingles or strip-shingles of bitumen-felt. A wholly dry construction for ceilings is becoming usual, employing such materials as acoustic tiles, plasterboard, hardboard or plywood squares.

In low-cost housing, central heating only is provided, and often the chimney is prefabricated; in more expensive property fireplaces of stone or brick are provided in addition, largely for effect. There are, however, a far greater number of plumbing fixtures; besides bath, basin, w.c., and kitchen sink, a shower (sometimes combined with bath) a washing machine and a garbage destructor are practically standard equipment. So are those other "utilities," such as a refrigerator, a "deep freeze" and an electric cooker, and there is always a garage.

Some will see, in the foregoing, no more than a shack stuffed with gadgets; but in reality it is more than unjust to equate the American house with the English garden shed. The former is a highly specialised structure, built for a way of life different from ours, and having to provide, in greater extremes of heat or cold, a degree of comfort in some ways greater than our own. What is important, is that this system of construction is general for permanent housing in the USA, and is patently far more suited to prefabricating techniques than are our own requirements for permanent housing. The fact that timber is the principal material should not deter the British manufacturer; for exports to hard-currency countries, he can obtain both the quantity and quality of timber he requires. Nor need it be thought unwise to attempt to export timber to a timber-producing country. The USA import large quantities of softwood from Canada annually, and it should not be difficult to convince them of the advantages of purchasing it, in manufactured form, from the United Kingdom.

While timber is the more obvious material, others are not thereby precluded. It is well to remember that our sales of cars in America were not achieved by offering an exact imitation of the American article, and it is by no means inevitable that our greatest success would be achieved by wooden houses alone. Something that is proof against their enemy—the termite—would have a considerable attraction for the Americans.

THE MARKET

The number of houses erected annually in the USA is upwards of a million, and, of these, from 5 to 7 per cent. (no exact figures are available) are prefabricated. This includes all degrees of prefabrication, from the demountable and unfolding house, erected in six hours on a prepared site, to the lowest form of prefabrication, the "precut lumber parcel" with which the frame of a house can be erected in 32 hours. Most manufacturers prefer something between these extremes, known as a "house package" or "home package." The contents of a typical "home package" comprise a gas or oil-fired furnace, gas or electric water heater, kitchen cabinet and "formica" counter, metal windows and screens, picture-window, prefitted fir-panelled doors, wall panels, gable roof panels, roof trusses, "fibreglass" insulation, predecorated gypsum board ceilings, sidewall and roof shingles, all hardware, felt, and building paper, cornice and trim lumber and one prefabricated chimney. These contents vary from manufacturer to manufacturer: some include additional items, such as asphalt floor-tiles, plumbing fixtures, a prefabricated plumbing unit and an electrical wiring harness and even paint, while others omit heater and water heater. In general, "utilities" (which include plumbing fixtures, i.e., bath basin, w.c., sinks and piping, cooker, washing machine and refrigerator) are not supplied, and plumbing and electrical wiring are excluded. Trade union opposition is said to be the cause of the two latter omissions, while bathroom and kitchen equipment

are usually "branded" nationally advertised articles, supplied to the choice of the purchaser or builder by local agents.

The cost of the typical "house package" detailed above is approximately $2,350 to $2,750 (to which must be added transport costs by lorry or rail of anything between $30 and $1,700) for a two-bedroom house of approximately 700 ft. super. This type of house usually sells for about $7,000, though prices for two-bedroom houses range between $6,000 and $10,000 and for three-bedroom houses from $7,000 to $11,000. The weight of the "house package" varies from 5 to 9 tons.

The percentage of the total production of American prefabricated houses, in different price ranges, is :—

Sale Price Range (excluding land) $2.80 £1	Percentage of 1950 production.
Under $7,000	45
$7,000 to $10,000	42
$10,000 and over	13

In general, the cost of the "house package" and its transport constitute somewhat less than half the selling price of the finished house, excluding land.

Below is a breakdown of the cost of building in the USA, based on reports of 72 dealers in prefabricated houses, quoted in "Practices and Precepts of Marketing Prefabricated Houses," p.3.*

	Per cent.
House package and transport	41.0
Site preparation and slab	10.0
Erection and finishing	17.0
Plumbing	10.0
Heating	4.0
Electrical wiring	2.0
Completing job and rough grading site	4.0
Profit, overheads, etc.	12.0

A survey of the industry, conducted by the Housing and Home Finance Agency (a US Government Department) and published by the Prefabricated Home Manufacturers' Institute in 1950, gave the estimated number of companies then engaged in prefabrication as 75 (a more conservative estimate is 60) the vast majority producing timber houses. By comparison, there are some 60 firms in this country engaged in producing houses for export, of which about 20 per cent. prefabricate in timber. The probable production of the American industry, in 1950, was 55,000 houses (a more conservative estimate is 35,000) ranging from 10,000 (largest output) to 11 (smallest output) per single firm. The industry, in 1949, was officially stated to be in its infancy, to have had a stormy career, and to be still in the formative stage with marketing and finance as its major problems.

*Housing and Home Finance Agency, Washington, USA (Nov. 1952.)

MARKETING AND FINANCE

The output of the American industry is sold mainly to dealers (or retailers), who often are builders or estate-agents. These combined total over 75 per cent. of the dealers in prefabricated homes ; it is significant that only 2.5 per cent. of dealers are builders' merchants and that furniture and equipment firms acting as retailers make 5 per cent. of the whole. A very interesting fact is that the industry's output is sold by manufacturers with little or no advertising aids. Some manufacturers possess no sales force. Many dealers, however, possess a sales force, and advertise the product locally, not as a house-package but as a complete and finished home.

As to the probable duration of the demand for houses at its present figure of a million annually, informed opinion in the USA regards this as being from five to ten years.

During construction, this is the crucial problem, and its pattern largely follows that obtaining in this country, except that retail dealers finance, from their own funds, far more houses than in England. The percentage of dealers so doing is estimated at 44 per cent. Otherwise, banks, mortgage and insurance corporations and building societies provide the initial payment for the "house package" ; only about 18 per cent. of dealers are assisted financially by manufacturers.

PROSPECTS

Over half the mortgages on prefabricated houses already built were "insured" by the Federal Housing Authority, and a further third were "guaranteed" by the Veterans' Administration, both Government bodies. English manufacturers would find it almost impossible to provide mortgage facilities without such assistance, and they should remember that it is dependent on rigorous field tests of specimen houses (to be erected in the USA) and on conformity with ASTM specifications or their equivalent for materials.

Several facts stand out from this picture. The first is that, with an American house, prefabrication can provide an article identical in almost every respect with the traditionally built one. The second is that the American prefabricated housing industry is not highly organised, and competition with it should need less effort than was entailed in—for instance—selling automobiles in the USA. The third is that the market could be greatly increased in size by judicious advertisement, and that the demand for houses is likely to remain at its present level for five to ten years to come. Finance, with FHA and VA backing, need not prove an insuperable obstacle. Marketing is perhaps the most difficult of all. The market research it would necessitate, together with the organisation of a sales force, might well be more than most, if not all, British firms in prefabrication could afford. Perhaps a form of co-operative marketing would be the solution.

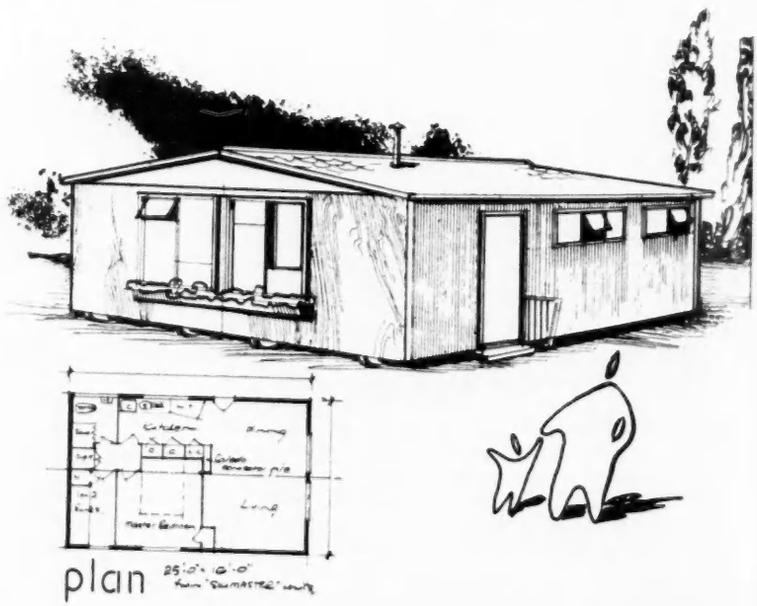
All will depend, however, on our being capable of delivering house packages in the USA, at prices at least comparable with the home-produced article—in spite of shipping and land transport costs, and the import duty.

THOMAS FOSTER.

"NEW DEPARTURE" BUNGALOW

Exhibitors :
STEPHENSON DEVELOPMENTS (Huddersfield), LTD.

THIS bungalow, which has been designed by Stephenson Developments (Huddersfield), Ltd., Grosvenor Works, Linthwaite, Huddersfield, is known as the "New Departure." It is made in two sections and mounted on steel skids, which eventually form the foundation of the building, and enable it to be towed into position (even over rough country) by lorry or tractor. For easy shipping the bungalow can be dismantled and packed flat, occupying only one-third of the normal stowage space, while the skids provide a convenient lifting aid for cranes and derricks. The bungalow comprises one room 15 ft. by 11 ft., a good-sized kitchen, one large and one small bedroom, and a bathroom which can be fitted either with a 5-ft. bath or shower. For tropical and semi-tropical use, the bungalow will be specially insulated and fitted with mosquito-proofed window frames and doors.



THE "APEE" BUILDING

Exhibitors :
ALL-PURPOSE BUILDING CO., LTD.

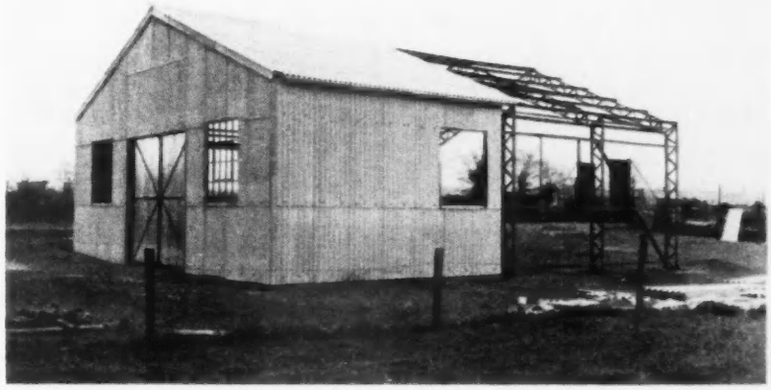
THE All-Purpose Building Co., Ltd., of Chilton Sudbury, Suffolk, are exhibiting one of their new range of Apee R.S.40 buildings at both Castle Bromwich and Earls Court. These buildings are at the moment manufactured in three standard designs of 40-ft., 50-ft. and 60-ft.-span models and the 40-ft.-span model, the R.S.40, has been chosen for exhibition at both sections of the Fair.

The buildings are of lattice portal frame design, manufactured on a unit construction basis, so that although the standard building is 100 ft. long (eight bays of 12 ft. 6 in.), buildings of either greater or lesser length can be supplied, made up of the standard 12 ft. 6 in. multiples.

The buildings are particularly attractive to the export market for several reasons : (*a*) Standard units are held in stock packed and bundled ready for export, hence deliveries of seven days, f.o.b., can be offered. (*b*) There is no single part in the design which cannot be lifted by two men with ease, thus facilitating erection or transportation of the buildings up - country in undeveloped zones.

(*c*) The exhibitors can supply an erection kit containing adequate plant and equipment to erect any size R.S. unit. (*d*) From the overseas merchants' viewpoint, the Apee R.S. buildings are of special interest, in that he can order for stock, for example, a unit 100 ft. long and if he receives an order for a building 50 ft. long he can supply it and then reorder from Apee sufficient parts and materials to augment his remaining stock to the original-size building of 100 ft.

The steel frame can be clad with either asbestos or aluminium corrugated sheeting. Windows can be placed in any of the standard sidewall bays and door assemblies can be placed either in the endwalls or in the sidewalls to suit specific requirements. If necessary, the R.S.40 buildings can be supplied without side or end walls where the purchaser prefers to erect infill between the stanchions.



The " Apee " R.S.40 Portal-frame building, showing steel lattice portal frame partly sheeted with asbestos.

THE "PUNT" SYSTEM OF PREFABRICATED BUILDINGS

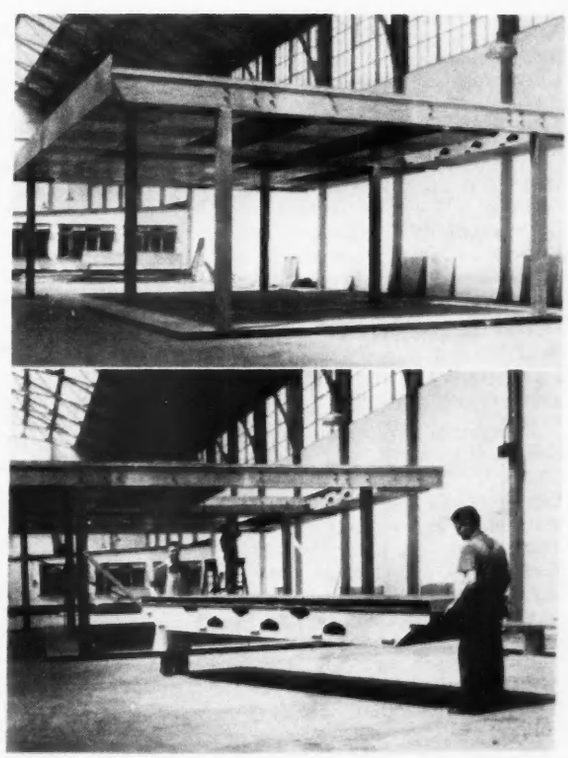
Exhibitors :
C. D. PRODUCTIONS, LTD.

THE "Punt" system of prefabrication is not designed for any one particular type of building but is equally suitable for housing, schools, hospitals, warehousing, etc. ; in fact, any type of building calling for single-storey structure. The only limitation is that buildings must be planned on a modular basis, the most suitable module being 3 ft. 4 in. No component (other than the 23 ft. one) is more than a two-man load and all sections can be lifted easily and fitted into place without the aid of mechanical lifting equipment.

These buildings can be erected by non-skilled labour and all sections can be economically broken down for shipment and require only a simple re-assembly operation on arrival at site.

The finished buildings have a 60-year life and come into the category of permanent, not temporary, buildings. After they have served a useful life of five, 10 or more years in one position, they can be taken down and re-erected elsewhere without harm to the components.

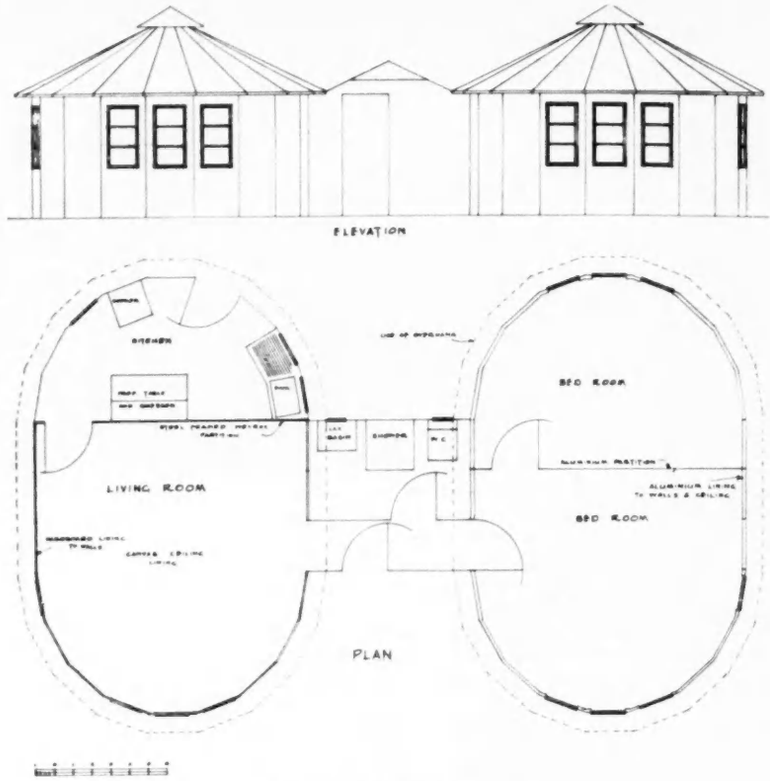
The exhibitors' address is 30, Uxbridge-road, London, W12.



Top : View showing method of erection. Below : Two men supporting a roofing component.

THE "UNIPORT" AND "OVERSEER" BUNGALOWS

Exhibitors :
BOOTH & CO.
(England), LTD.



The "Uniport" bungalow.

TWO prefabricated buildings, one constructed on a completely new system, are exhibited by Booth and Co. (England), Ltd., 34, St. James's-street, London, SW1, at the BIF. The "Overseer" bungalow has not been previously on view to anyone outside of the company, and has been specially designed as its name implies for overseas markets. The other dwelling is an improved design of cluster bungalow made up of units of the portable aluminium "Uniport."

The "Overseer" is a domestic application of the "Ubique" building system, which provides a frame and a panel structure based on a 6-ft. horizontal module. The frame does not depend on the panels for strength, although they stiffen the structure, and therefore any type of material may be used in the panels depending on the insulation value or surface quality desired.

The system enables contraction to be extremely flexible, and a great variety of buildings including houses, schools, churches and huts can be built from standard components.

Erection is very quick and simple, and little skilled labour is required, and all components can be easily handled. In the case of the "Overseer," eight men can erect the building in a week, and can improve on this with practice. Site work can be simple and inexpensive. A great deal of study has been given both to the question of transport as regards crating for shipment, and to the problems of families who may live many miles from normal means of transportation and communication. The component parts are light and pack well. A 36-ft. (six-bay) "Overseer" bungalow weighs about nine tons and measures 1,100 cu. ft. crated. Briefly, the specification is as follows :—

Frame.—The frame consists of a series of portals linked at the ridge and eaves by spacer panels. The whole divides for ease of transportation and is easily and quickly assembled. *Walls.*—The wall panels are of sandwich construction. The standard panel is 2 in. thick, and is made of two skins of $\frac{3}{16}$-in. asbestos glued to a low density core of Dufaylite.

Roof.—Aluminium sheets with Mansard type corrugations are supported on timber purlins which span the trusses. The sheets are alochromed to resist corrosion and to allow for painting, although the treatment gives an attractive finish. *Ceiling.*—The ceiling is suspended to give 9 ft. clear head room. The standard ceiling consists of $\frac{1}{2}$-in. plasterboard panels with an aluminium foil upper surface. *Internal Partitions and Doors.*—The internal partitioning is based on a 3-ft. horizontal module. The partition panels are similar in construction to the external wall panels and can be equally varied. The standard partition is 2 in. thick with $\frac{3}{8}$-in. plasterboard skins glued to the Dufaylite core. The panels can be supplied filled, as an extra, if required.

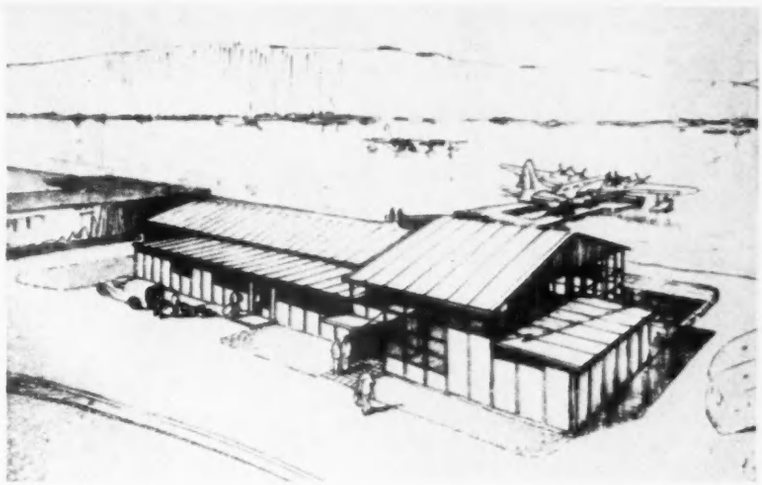
The "Uniport" bungalow consists of two standard Ovaltents with 13 s.w.g. aluminium walls and 14 s.w.g. aluminium roofs, joined by a new type of lobby, part of which forms an entrance hall and the remainder of which gives a bathroom with enclosed shower, lavatory basin and w.c.

The Ovaltents are divided by partitions to form two bedrooms, a large living-room and a kitchen. The partition dividing the bedrooms is a new design of aluminium sheet and the whole unit is lined, both walls and ceiling, with 18 s.w.g. aluminium. In other words, there are two skins of metal with an air space between.

The Ovaltent forming the living-room and kitchen is divided by a new steel frame and Weyroc partition. The walls have the more familiar hardboard lining except that a new type of fastening gives a much neater finish and does away with exterior battens and visible bolts. A canvas ceiling fitting to the roof is shown.

"BRISTOL" ALUMINIUM BUILDINGS

Exhibitors :
THE BRISTOL AEROPLANE COMPANY (Weston), LTD.



Evans Bay Flying Boat Base : Air Terminal Building.

THE Bristol Aeroplane Company (Weston), Ltd., Oldmixon, Weston-super-Mare, Somerset, are exhibiting at the BIF a large composite building featuring both tropical and temperate units in the one building and displaying a classroom and a hospital ward.

The "Bristol" system of unit construction in aluminium was introduced early in 1948 to alleviate the school accommodation problem in the United Kingdom. Originally designed to provide classrooms and corridors only, it was soon developed and improved to an extent which permitted the building of large schools and hospitals, complete in every way.

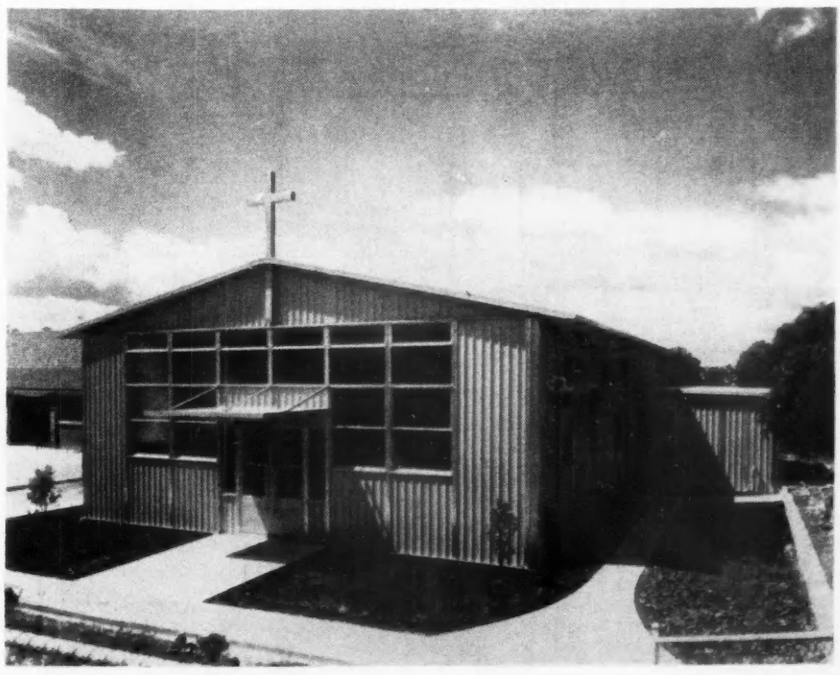
Schools in the United Kingdom accommodating up to 1,000 children have been built, and in Australia hospitals, complete in every way and accommodating up to 110 beds, are in the course of construction.

The Mark 1A form of construction embodies the latest improvements and developments, and the building on show reveals many new features. This form of construction is planned to provide pleasant and permanent institutional buildings, which are already meeting the most varied requirements, in many parts of the world. The main advantages of the system can be summarised as follows : (1) Speed of erection. (2) Economy of scarce materials and skilled labour. (3) Flexibility of planning ; made possible by the 4 ft. grid, and the variety of components available, plus the interchangeability of the units making them up.

(4) The fact that the buildings can be easily extended or completely dismantled and re-erected elsewhere. (5) High standard of the sound and thermal insulation. A "Bristol" wall of panels with corrugated aluminium external sheeting, lined internally with oil-tempered hardboard and filled with fibreglass, is the equivalent of an 11-in. cavity brick wall.

"Bristol" buildings are to be seen in the following countries : England, Scotland, Wales, Northern Ireland, Eire, France, French West Africa, Australia, New Zealand, Tasmania and Greece.

As far as is known, the photograph on the left of St. Cecilia's Church, Melbourne, shows the first aluminium church to be built anywhere in the world. The church was consecrated on October 26 by His Grace the Roman Catholic Archbishop of Melbourne, Dr. Daniel Mannix, DD. The church is built entirely of "Bristol" aluminium components.

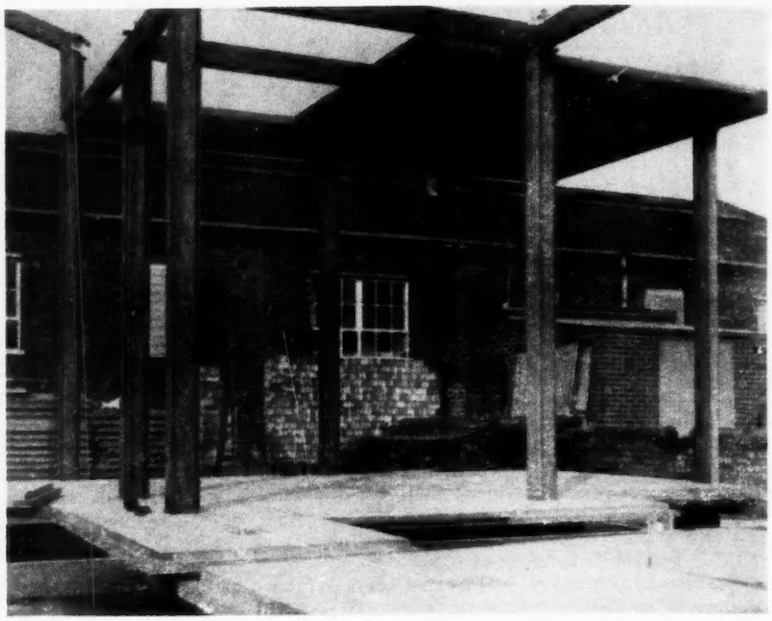


Aluminium Church at Melbourne.

MOD-X SYSTEM
Using Interchangeable Standardised Components

Exhibitors :
A. CAMERON, LTD.

Consulting Architects :
HARRISON & SEEL

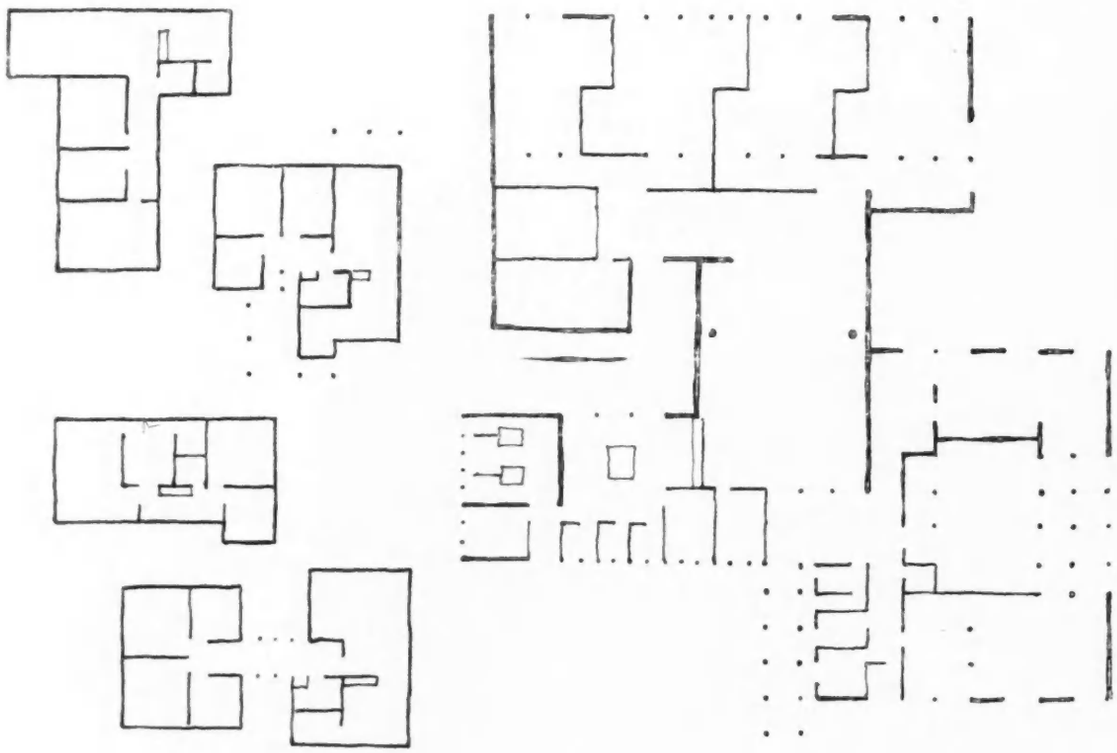


MOD-X is a new way of building utilising a "Meccano" principle of standardised components which are designed to be readily interchangeable and small enough to be easily handled so that a wide variety of designs can be achieved on the basis of the 40 in. module adopted. Developed by A. Cameron, Ltd., 38, Holland Villas-road, London, W14, it is based on a novel structural frame which can be used over quite large spans and which dismantles for transport into small component parts. These components consist of various standard beams, columns wall, floor and roof panels, together with standardised metal jointing units. The system derives its flexibility from the thorough application of dimensional co-ordination to all its parts. Ready demountability is a further feature.

The dwelling shown in course of erection is only one of innumerable types which it is possible to build by this method, which is equally available for larger buildings such as schools, hospitals, factories, churches, and in a variety of materials to suit individual requirements.

This exceptional flexibility is of the very essence of Mod-X, whose designers, themselves architects, believe that prefabrication should be an instrument in the architect's hands and not his inflexible master. As the project develops it is intended to make it available as such so that an architect will be able to choose just those parts he wishes to incorporate into his design, and he may, if he wishes, marry prefabrication to the use of his local materials.

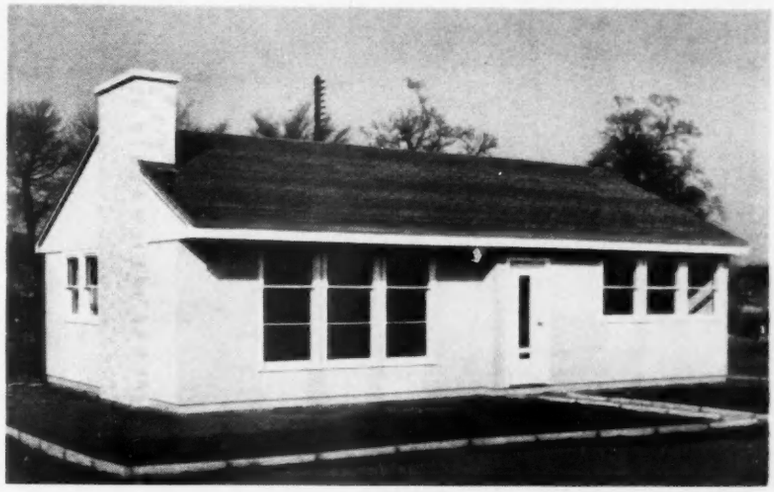
Mod-X is projected equally for export and for use in this country. The consulting architects are Messrs. Harrison and Seel.



Typical domestic plans (left) and a school plan to illustrate the adaptability and flexibility of the MOD-X method of construction. Roofs may be flat or pitched.

THE CRUDEN "Scotia" House

Exhibitors :
CRUDEN HOUSES, LTD.



A NEWCOMER to the export market in prefabricated houses, is the firm of Cruden Houses, Ltd., Musselburgh, Midlothian, which, although new to the export business, is well known in Scottish non-traditional house building.

Formed in 1946 from five established Scottish firms, Cruden Houses, Ltd., had as its objective the hastening of house-building in post-war Scotland by making the best use of prefabrication methods. Drawing on the resources of five well-equipped factories, the company will have supplied and erected some 10,000 of their "Dunedin" houses by this summer.

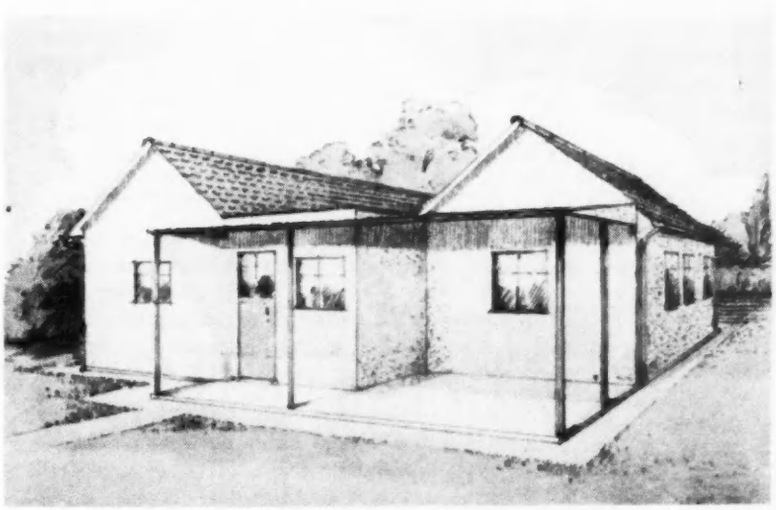
Following "on-the-spot" study of Canadian and U.S. needs and standards by Group Chairman Harry Cruden, an all-timber, fully prefabricated, fully sectional "export" house has been evolved. Ease and speed of erection by an absolute minimum of site labour are essential features. For instance, when prototype "Scotia 2" (shown in the illustration) was erected for the first time, the shell with all partition framing was erected on a prepared site by four joiners and two labourers in just under eight hours.

The "Scotia 2" house contains a spacious L-shaped lounge dinette of 260 sq. ft., a main bedroom of 106 sq. ft., and a smaller bedroom of 87½ sq. ft. Both bedrooms contain built-in wardrobes. Kitchenette and bathroom are back-to-back, the prefabricated plumbing being contained in the partition panel. The kitchenette is well equipped with cabinets, cupboard space throughout the house being on a generous scale ; while the bathroom contains bath (with shower), hand-basin and w.c. The house is intended for erection over the normal North American basement, which would contain laundry tub and air heater ; but if erection over a slab foundation is required, provision can be made for a centrally placed heating cabinet. Moreover, while the normal house is roofed with Ruberoid slates, an alternative design using Rigidal mansard aluminium sheeting can be produced. A three-bedroom house with similar essential features will also be available.

While the house illustrated is intended primarily for Canada and the U.S., the sponsors are confident that with slight modifications the "Scotia" house can be made suitable for practically anywhere in the world. In addition to the export of complete houses, the firm also hope to do business in folding roof trusses and prefabricated wall, door and window timber panels from which customers may make up assemblies to their own design.

"MOBILE" Sectional Reinforced Concrete Buildings

Exhibitors : MOBILE ACCESSORIES CO. (London), LTD.



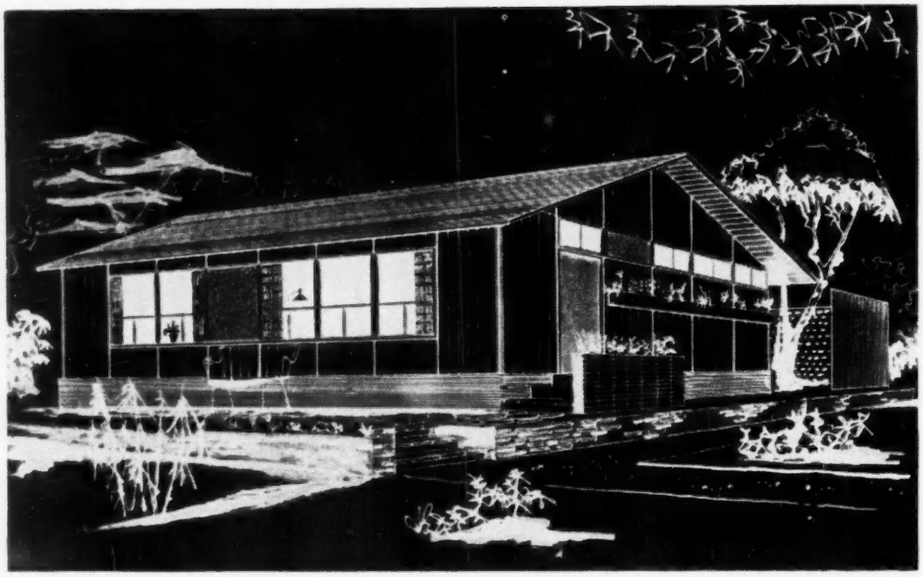
THESE buildings are constructed of reinforced concrete steel-framed panels which can be linked together and easily erected by unskilled labour in a matter of hours. Once erected they are strong and solid buildings and with normal upkeep have an indefinite length of life. No timber is used in the construction, so that they are termite and fire-proof.

Construction.—Each building consists of panels, the standard measurements of which are 8 ft. by 4 ft. by 1 in. thickness. Dimensions of buildings ordered should preferably be in multiples of 4 ft. A surrounding frame is first laid down in the form of a bed. Into this bed is laid a sheet of Asbestone treated on the inside for decorative purposes. Next to this is placed a screen of strong steel rods firmly welded on to the frame and a vertical damp course added to increase the insulating quality of the Asbestone. The operation is completed by pouring concrete into the panels and compressing the whole on specially constructed moulds. Studs are protected during this operation by dummy bolts which are removed afterwards. To further increase strength, angle-iron is placed surrounding the entire outside wall area. A roof truss is placed normally, every second section being so constructed as to take the place of a tie plate. Trusses are of normal triangular shape, the lowest section of the truss spanning the entire building, ensuring vertical roof stress on the walls.

A six- or eight-room building can be erected in about 16 working hours by four to six men.

The windows and doors are incorporated in the concrete panels and are interchangeable, thus allowing the erector to alter or rearrange the position of the doors to suit his own requirements.

This firm's offices are at Mobile House, 9, Clifton-road, London, W9.



A drawing of the house.

K-D HOMES

Exhibitors :
K-D HOMES
(London), Ltd.

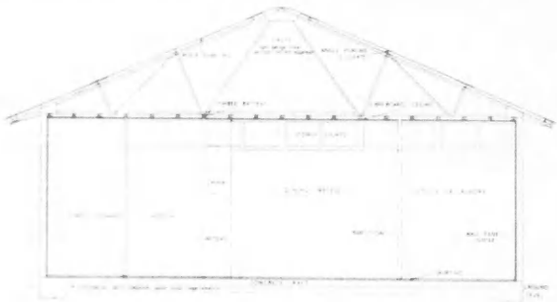
THE modular system of construction on which K-D Homes are based has recently been designed by Mr. J. A. Findlay, the company's managing director, after an extensive world tour to ascertain the requirements of overseas markets. These factory-made packaged homes are so designed that the work on the site is almost completely unskilled and very rapid.

The house erected at Earls Court (Type 2007) is basically for America and with very little modification can accommodate a basement making it suitable for Canada. Double-glazed windows and fly screens have been included and provision for a ducted hot-air system of heating has been made. Following is a brief specification :—

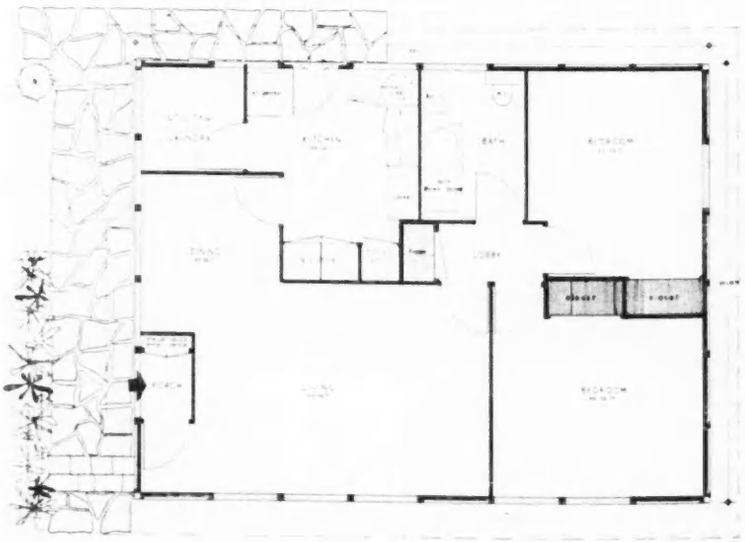
Base.—A concrete raft covered with thermo-plastic tiles, etc., or a wooden floor supported on bearers on concrete or brick piers. *Perimeter Walls.*—K-D insulated panels. Timber or steel frame clad externally with steel, timber or asbestos, lined with hardboard or plasterboard. *Roof.*—24-ft. clear span steel truss, steel purlins covered with asbestos, aluminium or steel sheeting, or timber battens and local tiles. *Partitions.*—Timber framework built into sections and faced with hardboard on both sides.

Ceiling.—Timber battens covered with insulation board or plasterboard. *Services.*—Electrical harness system to meet all needs. Cold water supply, hot water if required. *Insulation.*—The perimeter walls are insulated with fibreglass and reflective foil. *Air Conditioning.*—Space heating by a traditional fireplace or by means of ducted hot air. Summer cooling by ducted cold air from a suitable plant.

The exhibitors' (K-D Homes (London), Ltd.) address is 6, Chandos-street, London, W1.



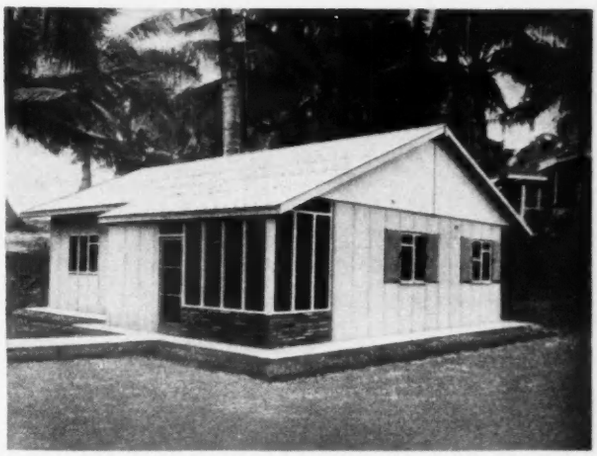
Cross-section.



The plan.

THE "SUPALITE" HOUSE

Exhibitors :
MAYCRETE, LTD.



THE "Supalite" form of construction has been evolved mainly for export to tropical countries where an urgent and widespread need exists for houses, schools, hospitals and public buildings. The structural framework is made of fully heat-treated light alloy sections to Specification A.W.10B, a material of great strength and ductility combined with high resistance to corrosion.

THERMAL INSULATION

Careful attention has been devoted to thermal insulation, which is provided by various combinations of external cladding, building slabs of wood-wool or glass-wool, aluminium foil, air space and insulation board or other internal lining. The normal transmissibility factor U for external walls and roofs is 0.1 British Thermal Unit per sq. ft. per hour per degree Fahrenheit, but this can be varied according to climatic conditions without adversely affecting the structural stability of the building. All timber is specially treated to resist rot, and all other structural materials are highly resistant to attack by termites and fungoid growths. Nuts, bolts and washers have all received sherardising or similar treatment.

An outstanding feature of the design is that all external wall and window panels are of uniform size and therefore interchangeable, so that the design and layout of the building can be modified to suit individual requirements. Erection is very simple and no skilled labour is required, the only essential tools being a screwdriver and a spanner. A bungalow measuring 42 ft. by 26 ft. with a verandah can be completely erected by unskilled native labour in 500 man-hours. Dismantling is equally simple, the dismantled building being ready for immediate erection on another site.

Buildings are supplied crated and packed ready for shipping, a three-bedroom house with a floor area of 1,200 sq. ft. turning the scales at about 17 tons. All packing crates have been designed so that conventional lorries of moderate size and capacity can be used without special equipment being necessary.

Design is based on a horizontal module of 24½ in. and the roofs can either be pitched or flat with suitable overhang. Verandahs of any size can be incorporated and flyscreens can be provided if necessary. Ceilings are formed with a fibreboard backing of wood-wool slabs 1 in. thick, having additional insulating materials incorporated where necessary.

General arrangement of a three-bedroom bungalow is shown in the sketch. Panels are 2 ft. or 4 ft. wide with a maximum height of 12 ft., locked into the metal framework of the building. External cladding may be asbestos or hardboard, but the core is composed of wood-wool slabs or glass-wool blanket, insulation being further enhanced by aluminium foil and an air space. Windows are incorporated in panels, as required, and the door panels are 4 ft. wide with appropriate height, the door frames fitting into predetermined positions in the framework. Panels are timber frames with an overall thickness of 2¾ in.

Internal panels are 2 ft. or 4 ft. wide by 11 ft. 6 in. high from floor to ceiling, with fibreboard or hardboard on each face with an air space between them. The panels have timber frames 2¼ in. thick, and wood-wool slabs or glass-wool blanket can be inserted to provide sound insulation.

ROOF TRUSSES

The roof trusses may be of structural mild steel rolled sections or of light alloy units, and are set at 4 ft. 1 in. centres with adequate cross bracing, the roof overhanging the walls from 1 ft. 6 in. to 5 ft. at front and rear, as required. Overhang at gable ends is only 1 ft. Roofs have been designed to provide maximum insulation, the standard truss allowing adequate room for installation of ducting and other services. Pitched roofs have an angle of 22½ degrees and are normally covered with aluminium, asbestos or similar sheeting, insulated.

This interesting system of prefabricated construction for buildings for which Maycrete, Ltd., Parliament Mansions, Abbey Orchard-street, Westminster, SW1, have the sole world selling rights has been developed in conjunction with the manufacturers, G. H. Burgess and Co., Ltd., Southall, Middlesex.

THE NEATA HOUSE

Exhibitors :
NEATA PRODUCTS
(Cheltenham), LTD.

Consulting Architects :
L. W. BARNARD
& PARTNERS, FFRIBA

NEATA Products, of Leckhampton, Cheltenham, are exhibiting one of a range of new unit-construction cedar dwellings at the BIF. In conjunction with their consulting architects, Messrs. L. W. Barnard and Partners, FFRIBA, of Cheltenham and Cirencester, the firm has designed a range of prefabricated cedarwood units in 2 ft. modules which are sent out completely prefabricated, together with prefabricated trusses, ceiling joists, etc., to form complete exteriors of buildings which would be interior-finished by builders in the traditional manner.

Although a complete range of designs, together with plans and bills of quantities, are available, all designs are essentially adaptable and there is plenty of scope for personal planning of interiors.

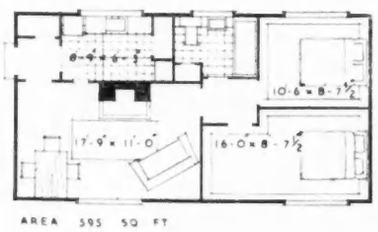
The roof of cedar shingles is pleasing in appearance, efficient and long lasting in use, while internal walls can be finished in any desired method, such as hollow partition tiles rendered or timber partition units faced with plaster or insulating board and suitably decorated.

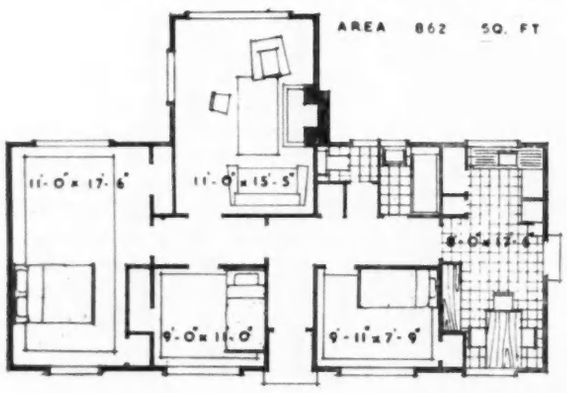
The use of Canadian red cedar as a medium for exterior cladding is not only extremely attractive but is in line with traditional methods as used in Canada, America and Scandinavia for many hundreds of years. This material combines very long life with little or no shrinkage and a high insulation value, and it has been effectively used in many parts of this country.

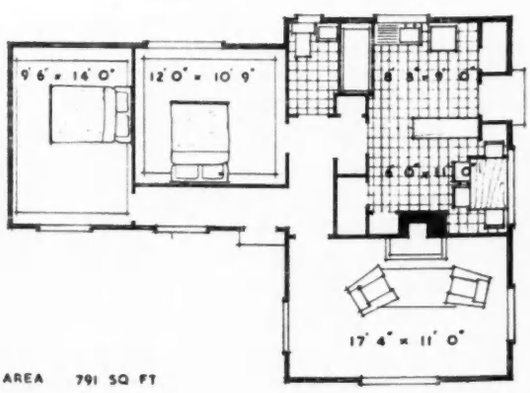
The exhibitors state that the use of Neata units allows speedy erection of houses and substantially reduces costs.

The low cost of building Neata dwellings, combined with the availability of loans under the Acquisition of Small Dwellings Act, will, it is believed, be a strong incentive to house ownership for many people to whom this has previously been impossible, while many estate owners view them favourably for the quick and economical housing of farm labour.

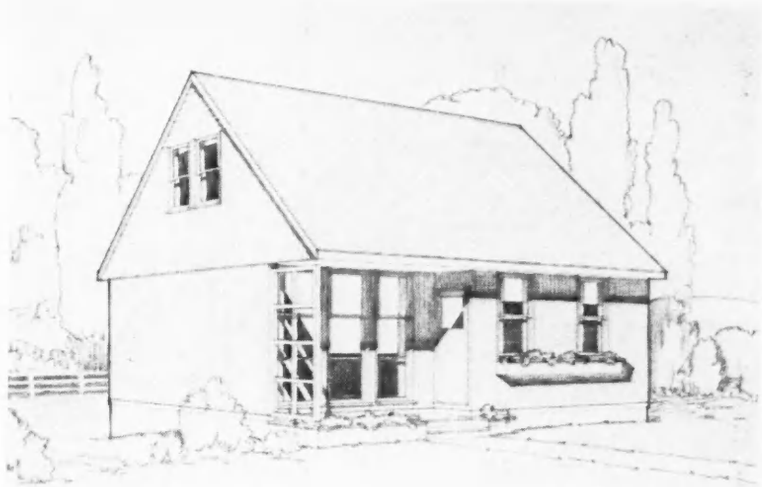
The company hopes that many builders will take the opportunity of visiting their house being exhibited at the BIF and discussing in further detail the contribution which Neata units can make to the building industries at home and abroad.







Examples of alternative floor plans.



ONE-AND-A-HALF STOREY HOUSE FOR CANADA. Designed by S. K. Biggs, AAIA, and D. J. Middlebrook, ARIBA.

RILEY-NEWSUM Houses for Canada and Belgian Congo

Exhibitors :
H. NEWSUM SONS & CO., LTD.

K5. 1½-Storey House for Canada (with basement).—The total ground-floor perimeter area of this house is 620 sq. ft., and the total internal area, 940 sq. ft. It has been designed with a view to reducing site work in basement excavation by reducing the total perimeter. Bedroom accommodation is provided within the roof space. It is based on a 3 ft. 4 in. module grid.

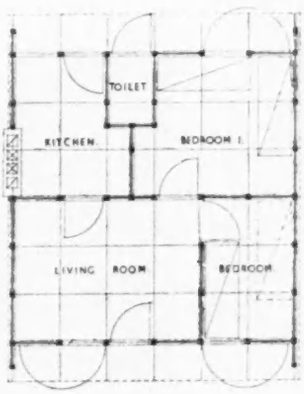
Construction.—Ground floor wall panels 3 ft. 4 in. by 8 ft. high, insulated with glass-wool breather paper and double thickness of plasterboard. *Roof.*—Precut and predrilled twin rafter and strut members assembled in two stages to form, first, two base triangles, the apex roof triangle being assembled on the ground and lifted on and fixed with a splice joint by bolts and timber connectors. ⅜-in. plywood outer sheathing nailed to rafters and purlins and roofing of Ruberoid shingles. The bedroom walls and ceiling are lined with insulated plasterboard with additional insulation of glass-wool quilt.

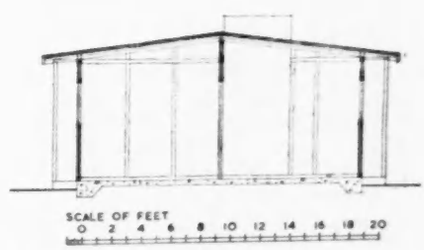
Native House for Belgian Congo.—This comprises a living-room, two bedrooms, kitchen and toilet. It is designed on a 3 ft. 2 in. module grid.

Construction.—Walls. A 3 in. by 3 in. grooved and tenoned post with an insulating sandwich board consisting of ½-in. fibreboard core glued to two outer skins of 3/16-in. asbestos cement, forming a panel between. The posts are erected on the cill plates and the panels slid in between the grooves. *Roof.*—A simple rafter construction spanning between the eaves and central spine wall at 3 ft. 2 in. centres. 2 in. Stramit panels laid on top with roof covering of two-ply tropical roofing felt. The roof is painted with light reflecting paint.

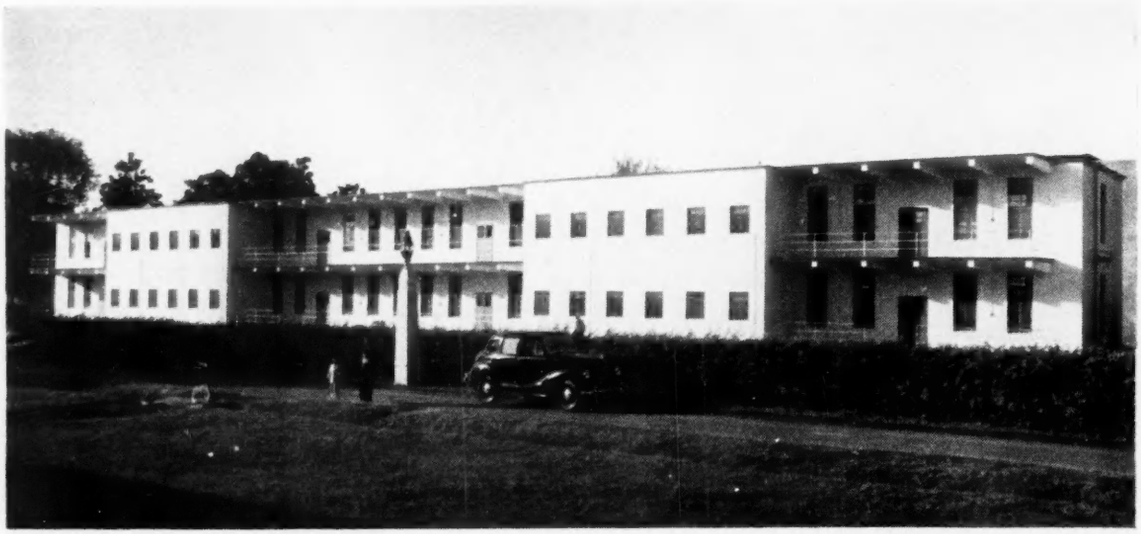
The exhibitors' offices are at Carholme-road, Lincoln.

NATIVE HOUSE FOR THE BELGIAN CONGO. Designed by Daniel J. Middlebrook, ARIBA. Chief Assistant, Geoffrey Cook.





NATIVE HOUSE FOR THE BELGIAN CONGO



Irwin Hospital, New Delhi : Ward block for 96 beds.

REEMA BUILDINGS

Exhibitors :
REEMA CONSTRUCTION, LTD.

THE Reema system of building originates in housing for local authorities in the United Kingdom. The essential feature of the system is the use of large precast concrete hollow wall panels which, when erected, provide vertical cavities for the pouring of *in-situ* concrete columns. The tops of the panels form a horizontal trough in which is cast a reinforced concrete ring beam. The resulting structure is a framed concrete building with hollow concrete panels as in-filling.

An independent investigation of the system by the Ministry of Works is described in Special Report No. 10 of National Building Studies which refers to the saving in labour requirements that can be achieved.

The application of the system to building problems overseas was an obvious development and the first undertaking was the building of a luxury holiday resort in the Bahamas. In eight months approximately 400,000 sq. ft. of living accommodation consisting of two-storey " chalet " blocks were completed for occupation, together with all necessary recreational buildings, a swimming pool, roads, sewers, water and electricity supplies. The scheme also included an airport with buildings to international standard. The site was an island of coral rock virtually uninhabited with no harbours, jetties or roads and no local resources of material or labour.

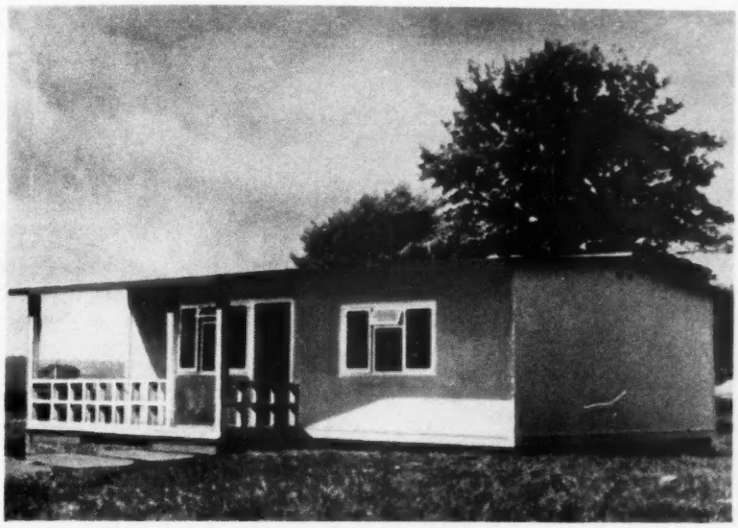
Comparison between the construction of the Reema buildings and identical units built traditionally in hollow blockwork showed that the Reema was cheaper by 30 per cent.

A number of two-storey hospitals have been built in New Delhi, India, clearly demonstrating the suitability of the Reema system for tropical conditions involving wide ranges of temperature. The cost compares very favourably with other methods of construction and local labour is trained by a small nucleus of supervisors sent from this country. All precast concrete units were made in the open air on the site and the capital outlay for moulds and plant is small.

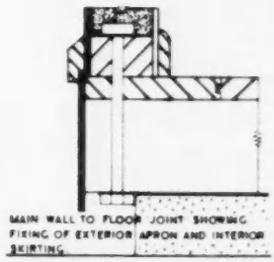
The system is not designed for the export of units from the United Kingdom as their weight makes the cost of shipping uneconomic. Advantages, however, are offered by the manufacture, locally, of the panels and other precast units as there is a substantial saving in cost and a considerable reduction in building time compared with traditional methods. The services of the Reema design and supervisory staff are available for overseas clients. Offices of the company are at Milford Manor, Salisbury.

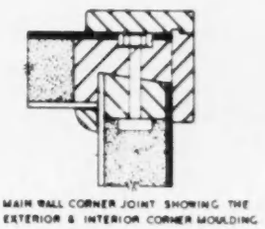
Typical pair of Reema houses in erection.

Chalet block in Reema construction, Bahamas.



A single-storey Scottwood house





SCOTTWOOD SYSTEM OF CONSTRUCTION

Exhibitors :

SCOTTWOOD FACTORY BUILT PERMANENT HOMES, LTD.

Consulting Architect :

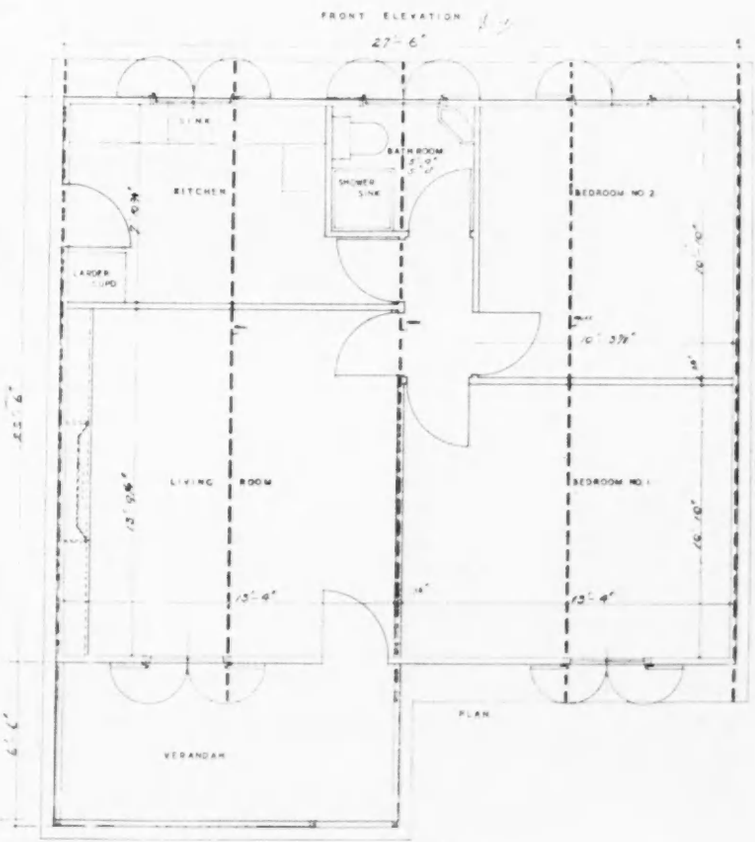
WILLIAM W. CARTER, ARIBA, AIAA

THE Scottwood system of construction, employed by Scottwood Factory Built Permanent Homes, Ltd., 4, Raymond-buildings, Gray's Inn, WC1, came about as a result of the need for new methods of building in the early days of the post-war housing programme. Factory production, non-traditional materials and speedy erection were a great saving on an overtaxed building industry. The logical development was two-storey council houses, and sites all over the South of England bear witness to the success of Scottwood permanent housing.

The prolific natural resources of timber in the Scandinavian countries, where timber factory-built houses are produced on a large scale, has fostered the trend of construction towards the unstinted use of solid timber. The Scottwood system of construction is a complete departure from this practice. Wherever possible laminates are employed. Internal stresses which normally occur in solid timber structures due to the unstable physical properties of timber, together with the inevitable changing moisture content, are thus equalised, with the result that complete dimensional stability is obtained. Also, in place of timber boarding or siding for cladding wall sections, Scottwood walls are sheathed with resin-bonded exterior-quality weatherproof plywood. Two plywood skins are nailed and resin-bonded to the internal softwood framing, the internal cavity between the two skins having been previously filled with glass fibre, to give the walls a thermal efficiency twice that provided by traditional brick cavity construction. Glass fibre is, in addition, fire-proof and vermin-proof. This general design follows the line of development known as the " stressed skin " principle, the basis of much modern aircraft design. This type of section obviates the use of pillars or supports.

The Scottwood house being exhibited at the BIF is a two-bedroom single-storey type incorporating a verandah. Circulation space has been deliberately reduced to get the maximum benefit from a superficial floor area of 675 sq. ft. This model shows a pitched roof, though all single-storey houses are also available with a flat roof. The flat roof is made up of insulated stressed-skin Scottwood sections bolted to the main structure.

In order to demonstrate the use of plywood in decoration as well as construction, the plywood walls of the living-room have been waxed and polished. The general finish also shows that factory-produced buildings can compete with brick and plaster.

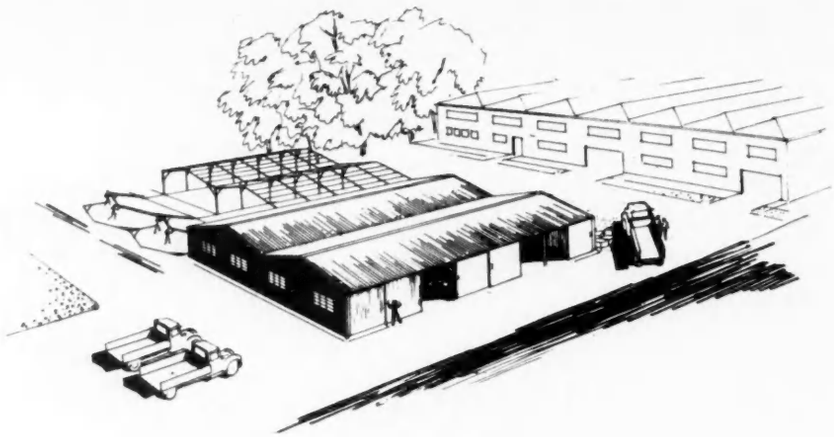


Plan of the house pictured above.

ALFRAME ALUMINIUM BUILDINGS

Exhibitors :
S.M.D. ENGINEERS, LTD.

Consulting Architects :
A. F. HARE & PARTNERS, ARIBA



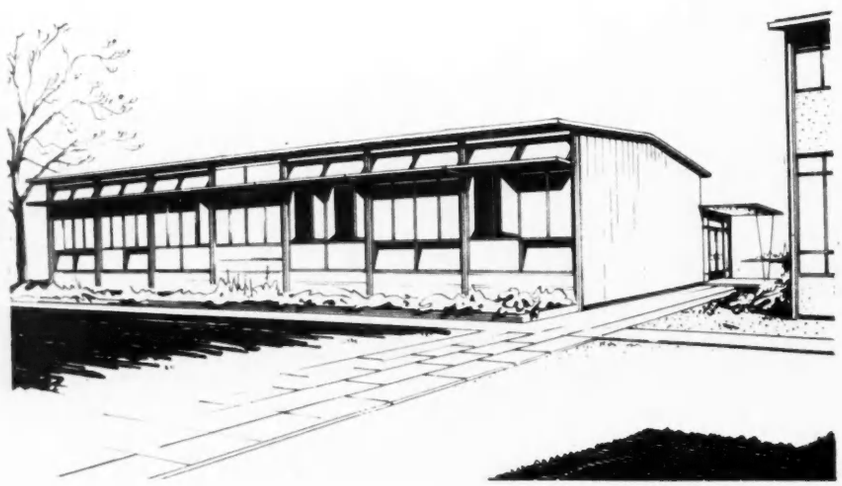
Garage and warehouse.

SINCE the end of the war Structural and Mechanical Development Engineers, Ltd., have designed and erected many types of prefabricated buildings in aluminium, ranging from hutments to aircraft hangars. S.M.D. Alframe bungalows and storage buildings have been erected in all parts of the world.

The models shown at the BIF include the Alframe bungalow, constructed in aluminium and designed particularly for tropical and sub-tropical climates. Bungalows of this type have been produced to a variety of plans to suit varied conditions and requirements. Another model shows a typical oilfield layout where Alframe bungalows and storage buildings were used exclusively for housing, canteens, workshops, etc. This is typical of the advance oilfield survey unit for which nearly 200 Alframe buildings were exported to the Argentine for one project.

The various aircraft hangars in aluminium designed and constructed by S.M.D. are represented by a series of models. One shows the 200 ft. clear span hangar for the De Havilland "Comet." Various photographs illustrate S.M.D.'s work in this field, particularly the photographic enlargement of the three 150 ft. bay hangar for the Ministry of Civil Aviation erected at London Airport. S.M.D. offices are at 2, Buckingham-avenue, Slough, Bucks.

The Alframe bungalow.



An Alframe classroom.

ARCON FABRICATED STORAGE STRUCTURE

Exhibitors :
TAYLOR WOODROW
(Building Exports), LTD.

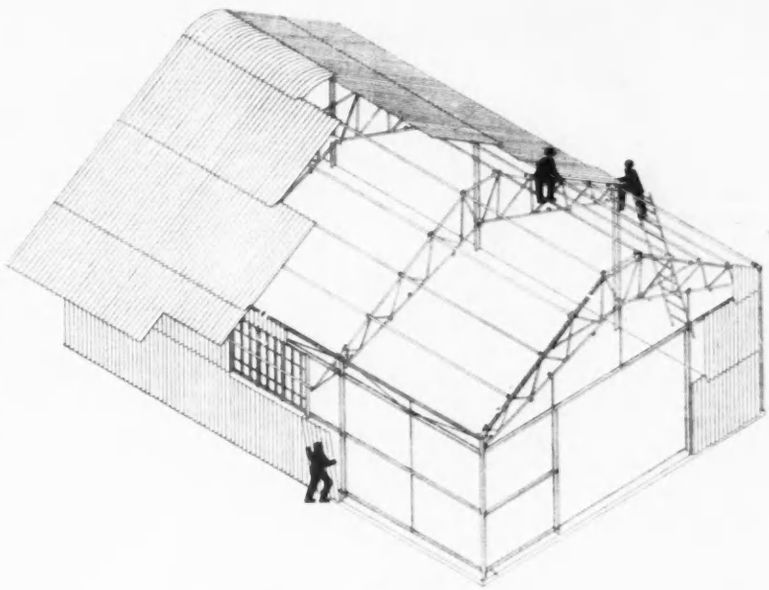
Consulting Architect :
RODNEY THOMAS, ARIBA.

THE British Industries Fair has been the occasion for the launching of several new Arcon fabricated structures. Taylor Woodrow (Building Exports), Ltd., 41, Welbeck-street, London, W1, are exhibiting in the prefabricated houses section, where the Arcon storage building which has already been exported in large numbers, is on show.

This building has been specially designed to satisfy the demand that exists for an easily and rapidly erected complete structure, suitable for such purposes as storage and light industrial uses. It differs from the Arcon tropical roof in that instead of use being made of local materials for the wall construction, the entire building is supplied ready for assembly ; this includes corrugated sheeting and all necessary fixings for wall cladding.

A further difference is that, in keeping with the generally larger scale of storage and industrial requirements, the storage building is based on a larger planning unit. Each bay has a dimension of 16 ft. 8 in. (5.08 m.) in the length of the building and two span sizes are available, 33 ft. 4 in. (10.16 m.) or 50 ft. (15.24 m.) ; a choice may also be made of three column sizes giving heights to eaves of 10 ft. 6 in. (3.20 m.), 14 ft. 6 in. (4.42 m.) and 20 ft. 6 in. (6.25 m.).

Although the storage building has been developed with the object of providing a completely enclosed structure, it is also possible to use the basic framework of supports and roof only as an open-sided building or as a building with half-height or full-height walls made with local materials, as need may dictate.



Diagrammatic outline of storage building.

Other developments on view are : The " sawtooth " roof building (known in the northern hemisphere as the northlight roof building) which distributes light without glare and is highly suitable for factories ;

The " three-pin frame " and roof, specially designed for sites free from hurricanes and other climatic disturbances, so that bedding foundations are not necessary ;

The " demountable building " for temporary accommodation, which can readily be moved to another site ;

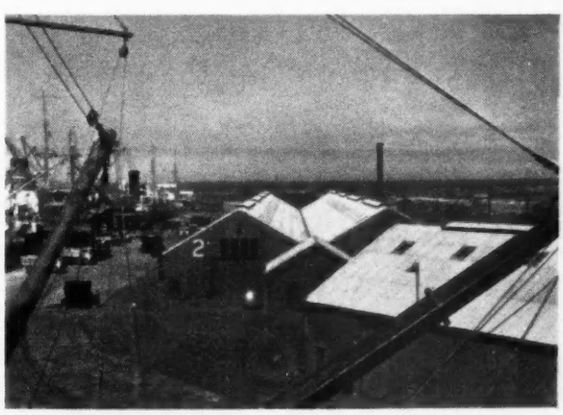
The " panel construction house," a feature of which is that the roof goes on first, the rest of the work then continuing whatever the weather ;

The Arcon " curtain walling," a weatherproof skin in the form of panels for the exterior cladding of large buildings ; and a multi-purpose portable hut.

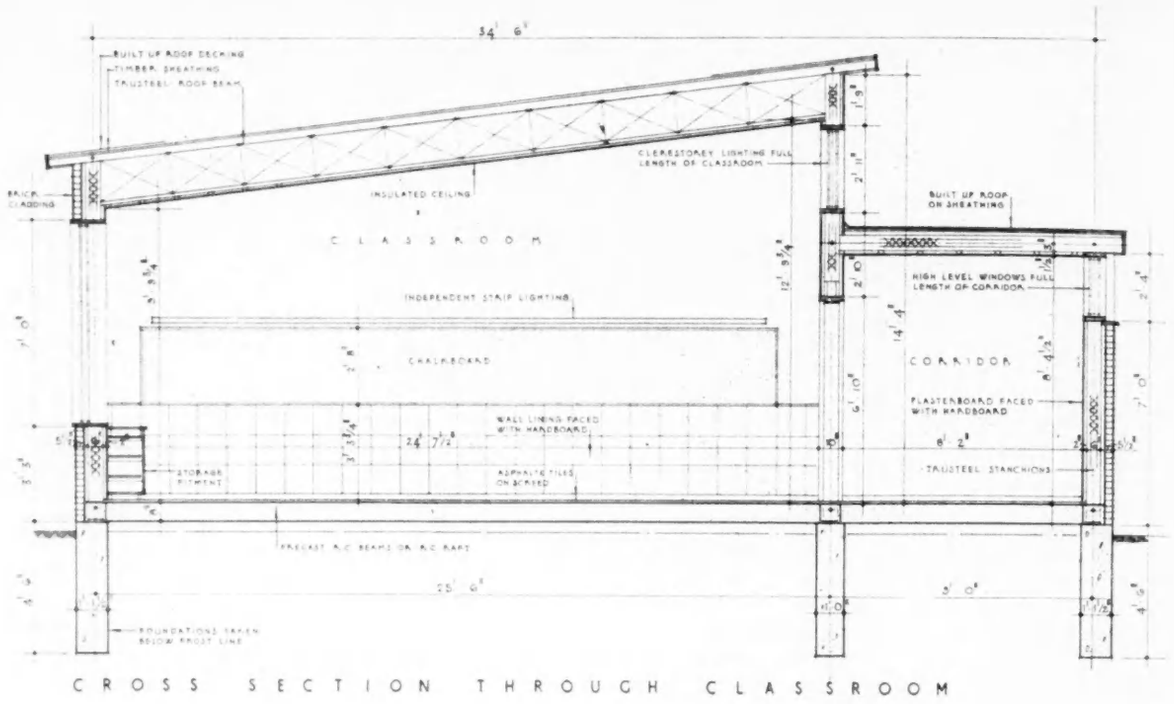
A further development is the new " Arcon general-purpose roof." This has been specially designed to cover the requirements of an almost limitless range of buildings. In addition, by the use of extra units—available in three span sizes, two bay sizes and three heights—and the use of hipped roofs and T and L junctions, it can be adapted to an almost limitless range of designs.

The basic idea behind Arcon structures is a light-weight unit which can be multiplied and adapted to any size of building for any purpose, and for which local cladding can be used where it is available ; if it is not available, complete structures can be provided.

At the same time, the firms comprising the Arcon Group emphasise that they are not merely selling structures, but rather a service for world-wide development projects—from investigation of the need, through the processes of design, development and manufacture, to shipment and supervision of erection



Part of Arcon storage building, Fremantle Harbour Trust, W. Australia. Right : Interior.



Section through a school building, showing construction.

THE "TRUSTEEL" BUILDING SYSTEM
for Homes, Hospitals and Schools

Exhibitors :

TRUSTEEL CORPORATION (OVERSEAS), LTD.

THE "Trusteel" system of building which has been in use since 1946, utilises a lightweight steel frame. It has been designed to speed up and cheapen the erection of single- and two-storey houses, light factory buildings, single-storey hospitals, schools and similar types of structure. This system should not be confused with prefabrication of a temporary nature, for it is, in principle, the development of traditional building upon more scientific lines.

The use of a steel frame as a basis for traditional building has long been recognised as by far the most satisfactory method by which a real increase in speed of erection can be attained. Hitherto steel framing has been confined to hot rolled heavy section girders which are quite obviously out of place in light buildings.

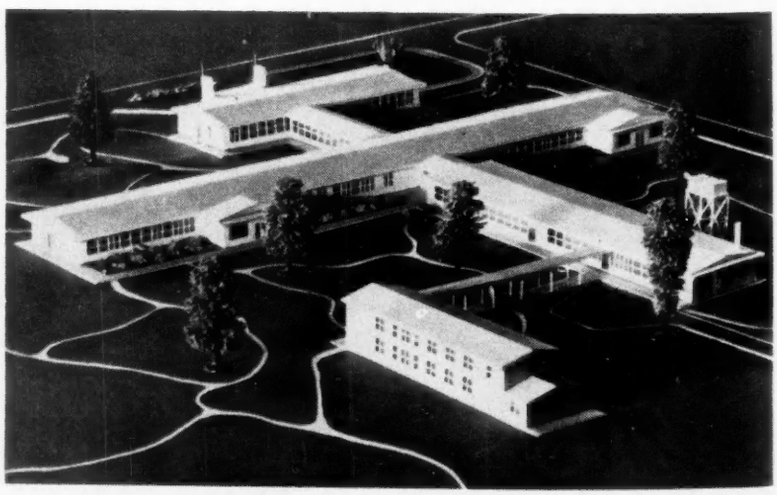
In the "Trusteel" system the use of bolts, so far as erection is concerned, has in the main been eliminated and the steel sections used for stanchions, floor joists, rafters and ceiling joists are from fabricated cold rolled sections of relatively light gauge. The steel framing has, as the name implies, been fabricated as trussed steel or, to describe it simply, bracing has been used in the most effective manner to achieve stability without weight.

The framing is designed to receive panels of almost any material (plaster, wall board, steel, aluminium, plywood, etc.), and thus gives opportunity for the use of almost any of the available materials of this nature. Externally, according to the nature of the building required, covering can be made from traditional brick, which is preferred, concrete slabs, or any alternative weather-proof material.

The photograph reproduced on this page is of a 35-bed hospital which can be extended as required to accommodate a greater number of beds as the various "units" of the hospital, i.e., clinic, out-patients and casualty block, the midwifery block, the kitchen and services, etc., are designed in self-contained "plan units" with which it is possible to obtain a minimum of 16 different layouts.

It is, therefore, possible for a project architect to obtain suitable orientation of the buildings, as designed, on almost any site.

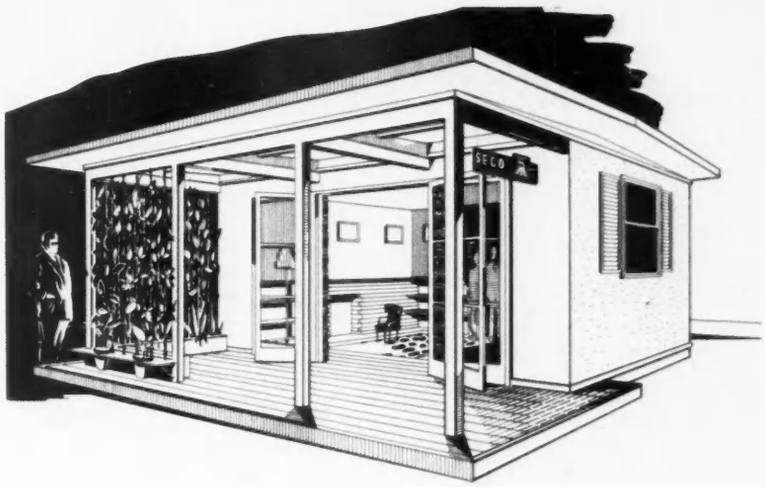
The whole of the joinery and mechanical services are prefabricated throughout and these, together with the Trusteel steel frame, enable a speed of erection not before possible. The exhibitors' London office is at 421-426, Grand Buildings, Trafalgar-square, WC2, and the technical offices are at Lime Lodge, Heath-road, Oxhey, Herts.



A 35-bed hospital for Australia. Thirteen of these hospitals will be shipped in their entirety to Australia by June, 1955.

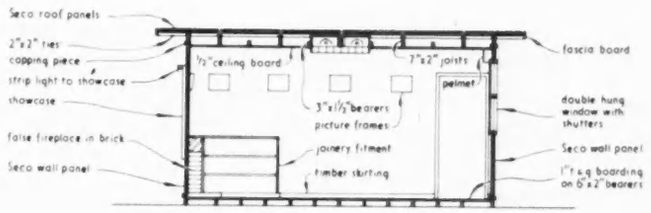
THE "SECO" SYSTEM OF BUILDING

Exhibitors :
UNI-SECO, LTD.

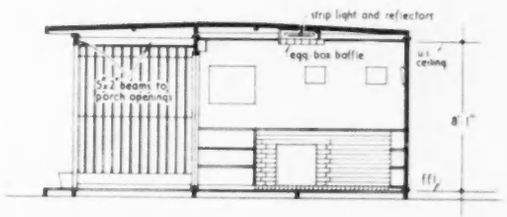


Uni-Seco stand at the BIF.

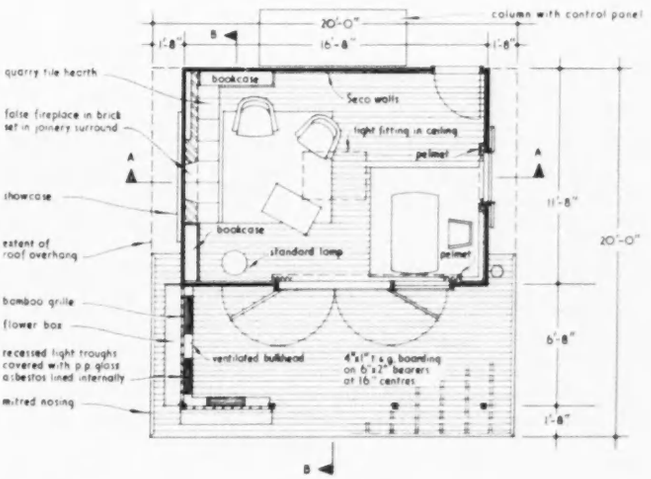
THE BIF stand of Uni-Seco, Ltd., 11, Upper Brook-street, London, W1, though not a complete prefabricated house, is a typical room manufactured in one of their forms of export housing construction and demonstrates the method selected for the contract for houses in Uruguay which they have recently secured. This firm offers a system of construction with which, generally speaking, it is possible to build to the customers' special requirements, but it is emphasised that an economic production cannot be achieved on the basis of designing and supplying a single house. It is only when manufacturing runs of a reasonable length can be organised that the full benefit of the system can be gained. The Seco system is a completely dry method of building. The assembly of the component parts is simple and may be carried out by semi-skilled labour under intelligent supervision. The Seco panel is a structural unit capable of supporting compression loads in excess of eight tons, and consists of a monolithic block of wood-wool cement insulating core integrally bonded to asbestos cement sheets which form the wall surfaces. This combination provides a building unit possessing high compressive and tensile strengths, excellent impact resistance and good heat insulation.



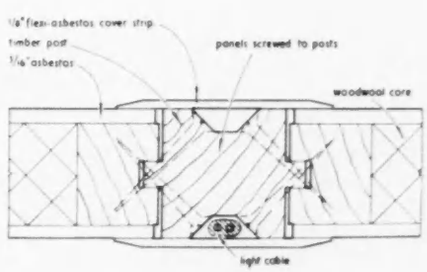
SECTION A-A



SECTION B-B



FLOOR PLAN



F.S. DETAIL OF 'SECO' WALL JOINTS

THE UNITROY HOUSE

Exhibitors :
UNITROY, LTD.

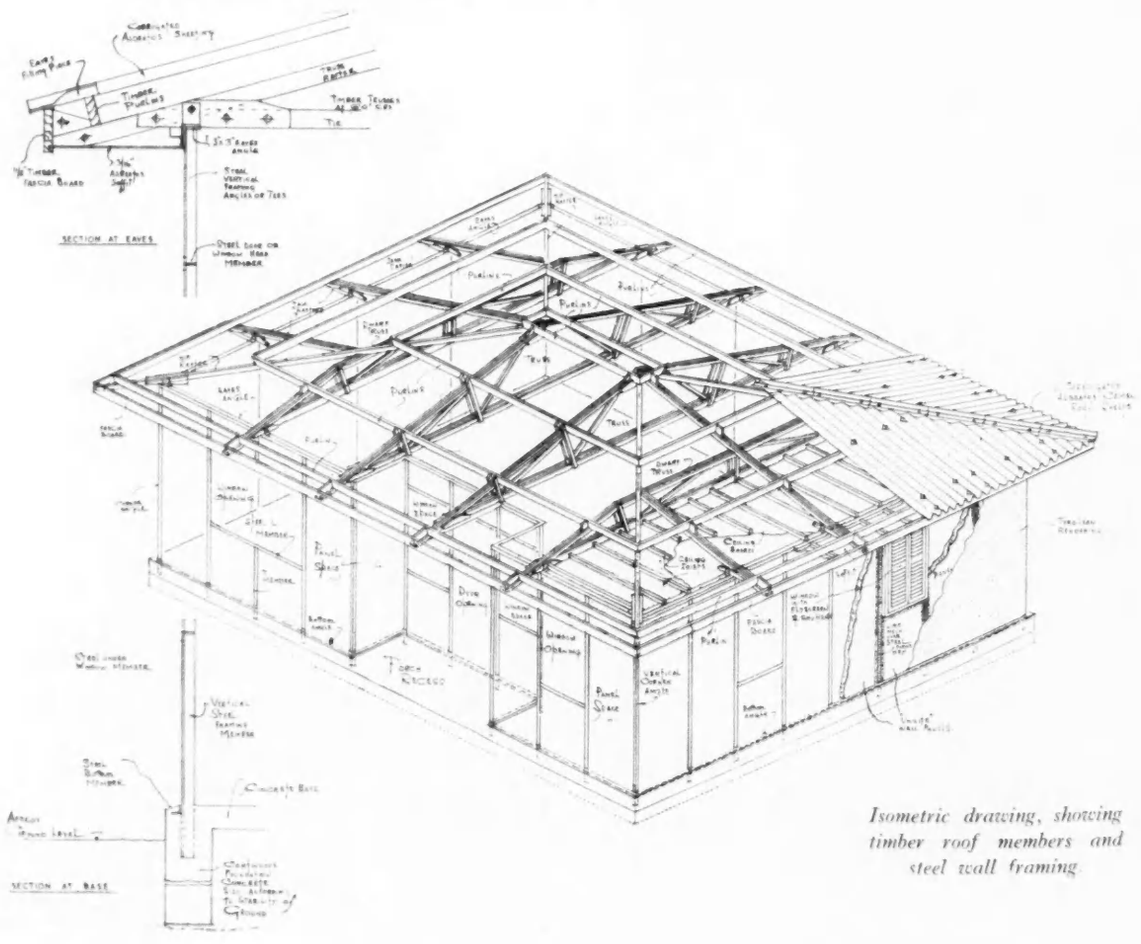
THE Unitroy construction entails the use of two factory-made walls, one forming the outer shell structure, the other the inner shell. When houses are manufactured for export the outer concrete shell is discarded and the walls then consist of the inner shell structure, finished externally in a waterproof surface which can be treated with roughcast on site.

Both systems of building have been successfully tested under varying climatic conditions. These houses can be varied in design to meet the requirements of architects or of individual taste both for the United Kingdom and for overseas markets. Both exterior and interior Unitroy walls are made of permanent materials, are dimensioned to practical requirements and are highly insulating , light and strong.

The accompanying isometric drawing shows the exportable Unitroy house. The vertical structure is supplied in a steel frame, shipped in sections specially designed for easy assembly by bolting. This frame is anchored to a concrete foundation raft and is fabricated to receive the Unilite walls, doors, windows and the roof structure which is supplied in preformed timber trusses and purlins designed to be easily fixed on to the frame, and covered with any type of tiling or in asbestos corrugated sheeting. Windows, shutters (with fly screens), doors and door frames, ceilings, electrical installation, plumbing and heating equipment are supplied in whole or in convenient sections for easy fixing on site.

For export these houses are also specially designed with a roof overhang of 2 ft. to run over verandahs where required. Schools, hospitals, factories and other types of structures can be constructed in this frame and panel system. A technical erection service has been made available for the Unitroy export house in addition to the instructions which are sent in sufficiently clear detail to enable overseas building operatives to learn the technique of building, and dwellings can be made fire-resisting for requirements of oil companies overseas.

Unitroy offices are at 31-33, High Holborn, London, WC1.



Isometric drawing, showing timber roof members and steel wall framing.

"UNIT-CONSTRUCTION" FOR THE MIDDLE EAST

Need of Greater Adaptability to Meet Extremes of Climate

THE present housing shortage is world-wide, and not restricted to the United Kingdom, Europe, or any other part of the world. It has its special problems in those territories referred to as the Middle East, and this article is intended to outline the contribution that "unit-construction"—a term possibly more apt than "prefabrication"—can make towards meeting these problems. This huge area of the world's land surface, extending from North Africa to the Persian Gulf, and from the deserts of Southern Arabia to the snowy hills of North Iraq, and inhabited by people with many religious and national customs, and with widely differing standards of health and education, has many complications which are unfortunately completely ignored by most of the British firms who have entered into the unit-construction market. For it is true to say that almost all of them have adopted the attitude that what is suitable for Europe and other temperate climes is adequate for the rest of the world. This is a failing which must be eliminated before British firms can compete with foreign manufacturers, who have always been ready to adjust their methods and designs to meet local requirements.

Climatic Variations

The first essential for the plan form and for the design and use of insulating materials is that meteorological data, which is obtainable from most of the countries concerned, should be consulted.

The conditions which prevail in the Middle East countries are very different from those in many other parts of the world, as they cover a shade temperature range of from, say, 10 deg. F. below freezing to 124 deg. F. temperature, and with humidities ranging from 25 per cent. to 80 per cent.; nor must the violent dust storms be forgotten. It will, therefore, be appreciated that with such large variations it is not possible to determine definite factors on which to base a requirement. Nevertheless, every effort should be made to produce buildings which, with slight modifications, can meet the requirements of the area under review.

Cost and Transportation

One of the most vital factors in this important, yet highly competitive, business is the question of cost, for it must be borne in mind that the Middle East has a need for cheap, well-designed, substantial buildings with good ventilation and sound thermal insulation.

To actual factory costs must be added those of crating, freight, insurance and onward transportation, which is frequently a not insignificant factor.

An actual example may be cited as typical. A spacious unit-constructed two-bedroom bungalow, designed specifically for the Persian Gulf, complete in all detail with its component parts, plus kitchen fitments, sanitary, plumbing and electrical fittings, and A/C ducting, when packed in small transportable packages weighed 24.5 tons. The cost per square foot of net floor area exworks was £2 16s. 9d., but by the time it was landed at Basrah the cost had been increased by 23 per cent. On to this must be added the erection charges. Therefore such buildings must be light, easily handled and packed to ensure easy stowage for transportation by ship, rail or road. Very frequently these buildings go to places where there are few, if any, of the mechanical lifting aids which are available elsewhere; thus everything must be man-handled—quite an expensive process, and one in which the risk of damage at the last moment is considerable.

A further factor which must be mentioned is the need to ensure that man-hours spent in the field for erection are reduced to the minimum. Something in the order of not more than 450 hours per 1,000 square feet of net floor area should be the target, using only semi-skilled labour and little or no supervision.

Method and Principle of Construction

It is not proposed at this stage to enter into technical details, but rather to specify in general the requirements for unit-construction. The method should be one of the greatest simplicity, using standard modules, and requiring a minimum of technical supervision. Therefore, anything which requires a multiplicity of tools or erection plant should be avoided, and the electrical, plumbing and sanitary installations should be of a simple unit type. The principle should be one similar to that of a Meccano set, whereby the merest novice can assemble the parts with the sure knowledge that no structural defects can be introduced by so doing.

Every advantage should be taken of the considerable development which has taken place in recent years in the employment of light alloys and composite materials, i.e., asbestos sheets, hardboard, softboards, wood-wool, aluminium foil, and many other recognised efficient and now accepted means of insulation; particularly as most of these materials are undoubtedly more suitable than timber which has been available in the past, for they are less subject to atmospheric conditions and insect attack. In deciding upon the method and principle of construction, it must not be overlooked that several Middle East countries have indigenous materials available, but not necessarily the technical or skilled labour to utilise them. This creates competition with import products, some of which will be essential in all areas.

Costs must, of course, be realistic in the light of the economic conditions of the governments or individuals concerned in promoting housing developments.

Housing Needs

It is advisable that several types of buildings should be designed in order to ensure that all classes of the population can afford one or other of the standard types. There is a limited requirement for the more expensive type of building in the Middle East. Several of the countries, Iraq, Saudi Arabia, Kuwait and Bahrein, are benefiting from oil royalties and are undertaking considerable engineering projects. They require suitable housing, offices, stores and other ancillary buildings for the various grades of personnel they employ, such as engineers, administrators, foremen and labourers. Unit-construction buildings would appear to be ideal, for they are rapidly erected and provide excellent accommodation. If this can be combined with a high recovery value, so much the better. Generally, the designs must be such as will allow for the different customs which form a part of the national life of the local populations, and may in some cases mean ensuring freedom of action for the womenfolk to carry on their normal occupations without being observed.

A small proportion of such designs may be required to incorporate air conditioning, but the majority could not afford such a luxury. Therefore, advantage should be taken of the prevailing breezes, and the aim should be to give a U-value better than .15 for walls and ceilings. Again, houses may have flat or pitched roofs. Flat roofs must have a purdah screen, but not such as to cut off the breezes, for in certain places people wish to get off the ground in order to take advantage of the night air. In other areas, however, the humidity is such that they cannot sleep outside.

In the Middle East certainly it is true to state that the rising standard of housing requirements of the population cannot be quickly enough met by traditional methods of construction, which are often cumbersome, slow and wasteful of labour. If, therefore, there is to be a considerable advance in the technique of unit-construction, designers and manufacturers must get together and face the many complex problems of the prospective users. While it is admitted that the Middle East's requirements are small in comparison with those of the rest of the world, it is the total world problem which requires solution, and by pooling experiences and information it ought to be possible to find the answer. Moreover, with care and attention, unit-construction buildings, not only of a temporary but also of a permanent nature, may well stand as a lasting tribute to twentieth-century engineering skills.

W. H. TURNER.

NETHERLANDS HOUSING

Good Prospects for 1953

AN OFFICIAL note from the Netherlands states that the total of new houses completed during 1952 was 54,601, writes a correspondent. Of these, 1,968 were "duplex" houses, so that 56,569 families could move into new homes.

The year 1952, the note adds, thus failed to equal the results of 1951, when 58,666 houses were completed, but it compared favourably with other post-war years which showed the following totals: 1950, 47,300; 1949, 42,791; 1948, 38,391; 1947, 9,243; 1946, 1,593; and 1945, 389.

The lower total for 1952 is partly the result of the incidence of completion, which happened to favour the year 1951. At the end of 1952 there were 51,260 houses in course of erection against 36,713 at the end of 1951.

Although the total of completed houses for 1952 was 4,065 less than in 1951, the number of houses with which a start was made was—at 69,372—higher than the previous year's by 26,457, thus foreshadowing good results for 1953.

In addition to the dwelling houses, 255 schools were completed in 1952, and 409 more were in course of erection at the end of the year.

AMC AND HOUSE-BUILDING COSTS

The Association of Municipal Corporations, which represents over 400 cities and towns, has decided that "little useful purpose" would be served by an inquiry into house-building costs, because of the number of similar inquiries that have been made recently. The proposal for the inquiry came from Accrington.

DANISH ARCHITECTURE

A Current Exhibition at the Building Centre

ONE approaches any Scandinavian exhibition rather cautiously nowadays. The impact of Scandinavian, and more particularly Swedish, architecture and industrial design upon this country in the 'thirties was surprising—even, one suspects, to the Swedes themselves. This affected designers and ultimately the public, who remained unreceptive to parallel but home-produced trends, and a similar situation arose as (at one time) in music and ballet, when it was necessary to adopt a foreign-sounding name in order to succeed here.

It may be that the ideas of people with whom we feel many racial and cultural affinities proved more acceptable and less "foreign" than those from elsewhere on the Continent. But, to paraphrase what Shaw said about us and America ("two great nations divided by a common language"), on reflection it was not uncommon to find that, in the midst of most convivial exchanges of those ideas, both nationalities were talking about different things, and the affinity was a bit forced. The admiration remained, but the 'thirties are past.

More probably, the proverbial hospitality of the Scandinavian races has had a good deal to do with it. It is only human to be influenced in a critical assessment of another country's architecture by seeing it in the congenial company of its architects, who are notoriously perfect hosts, and one sometimes wonders whether the sponsors of the recurring Scandinavian "revivals" are so influenced by this as to give us rather too much of a good thing. A "craze" does not always export well to people who have not seen it in such favourable conditions.

The commercialisation of "Swedish Modern" here has also done a great disservice to the country of its putative origin, and now that the centre of immediate interest has shifted to places which are admittedly far less clean, tidy, civic-minded and "good-tasteful" (such is man's ingratitude), though possibly a trifle more virile and red-blooded, one tends to groan, "What, again?" when Scandinavian design is mentioned.

Comparisons with Sweden

All this applies less to Denmark than Sweden, which we are apt mentally to lump together too easily. The national difference is apparent on the spot, but hard to define. There is, true, the cultural analogy roughly to be compared to the archaic Doric expression of classical thought as opposed to the Periclean golden age, but this is not entirely valid. But the fact remains that in comparing Sweden and Denmark, speculations about intellectual "guts" are inescapable. The word decadence would be too unpleasant in implication to apply to the architecture of the former, but it may be that an over-purified formula of good design has been arrived at too quickly there, while Denmark has been both more cautious and more "human" in arriving at what suits its people both factually and aesthetically. There seems to be a warning for the "ghastly good taste" boys and girls in this.

After a tip-toe approach, it is all the more pleasant to be able to write with enthusiasm of the Danish Exhibition now at the Building Centre. This is mainly of housing carried out since 1940, but includes the recent Civic or Festival Hall at Aalborg, and the show is pulled together and given domestic scale and atmosphere by a few examples of furniture and wallpapers. The setting is a particularly happy piece of "montage" as a result.

The first impression is one of envy—not so much of Danish architects' abilities and the sites available to them (mostly on the westward outskirts of Copenhagen, some with delectable natural landscaping advantages), but of the apparent enlightenment of their clients, both public and private.

The Danish Ambassador, Count Reventlow, with (left) Mr. F. R. Yerbury, OBE, Hon. ARIBA, Director of the Building Centre, at the opening ceremony.

The Sociological Viewpoint

An admirable leaflet, of unknown provenance but having a Danish flavour, is available in explanation, and is so difficult to improve upon that one is tempted to quote extensively from it. To take some salient points, "Danish architects have shown a degree of level-headed moderation typical of the Danish temperament (in experiments inspired from abroad after a period of comparative isolation), but the trend . . . shows entirely new features. A building exhibition can convey only an incomplete impression." "Nevertheless, it is the purpose of this exhibition to convey an impression of a residential district as a unit and . . . a uniform approach to architectural problems—an approach which is often the privilege of architects in small countries."

Precisely. But it is more than the compactness and homogeneity of architectural thought in Denmark which has produced this result, to which one is moved to add the adjective "triumphant" in spite of the becoming caution of the Danes themselves. It is in fact the obviously general acceptance of housing as, first and last, a sociological problem in which the material and constructional considerations—and to some extent the aesthetic ones—are incidental that has kept this consolidated progress on the rails. This can only be the outcome of enlightenment and enthusiasm in all concerned.

This is a somewhat bitter contrast to the position here, where local authorities have still to be persuaded—by their architects, at risk of losing their jobs—that, for instance, asphalt deserts do not make a place to live in; that children will "choose" streets to play in if there is nowhere else; that flats are only "homes" if certain essential services are provided collectively and financed by the landlord initially; and that the special needs of the old and the young, and the childless and servantless, must be studied in terms of design not as a matter of sentiment but of common sense and public conscience. Conversely, it will be a matter of enlightenment to make our new classes of "haves" see that if they prefer to use their new purchasing power on television sets and flash cars, while continuing to live in architectural squalor, it is no longer their own business but that of a nation which cannot afford this travesty of "freedom of choice."

If the Building Centre show is indicative, Denmark (a country also priding itself on its democracy, and not long liberated from occupational totalitarianism) seems to have evolved a sort of benevolent design and planning despotism, and good luck to it! Perhaps a better term would be "technocracy at work," while other countries are still debating whether the sociologist can help us to get to know those for whom we must build, and teach them how to use what we build for them.

The Test of Experience

The Danes are by no means complacent about a very considerable achievement to be envied as well as admired. The charming and helpful architects and their wives who were on hand at the opening made it clear that many of their ideas were still to be proved by experience in occupation, and that the difference between sociological theory and practice was as upsetting to calculations there as here.

But they seem to have taken attendant difficulties in their stride. The effect on one writer at least is an urge to revisit Denmark at the earliest opportunity to see it "on the ground," for, as the organisers point out, with a contemporary architecture which asks to be judged as much by plan, economic "programme" and sociological and other context as by visual externals, the conventional exhibition technique is inadequate.

In the words of a Danish lady, to describe a variant of the open plan, who had no need to apologise for her expressive English, "we are not too keen on this plan, but the houses are wonderful pretty." The Danish architect does not disguise that he is feeling his way towards a dwelling plan which is the best practical compromise of the conflicting elements to be reconciled. But the aesthetics are taking care of themselves. Here is a "functionalism" based on the behaviour of people in communities rather than of building materials, which takes full account of emotional reactions to places and what is built upon them. It is stimulating to be able to apply the word "sensible" to the result without feeling that this is damning with faint praise.

The exhibition remains open until May 6.

BASIL MARRIOTT.

CORRESPONDENCE

(*Continued from page 624*).

THE COST OF BUILDING

To the Editor of *The Builder*

SIR,—So much has been written recently on the cost of building work that it would seem many people think that if something can be done to reduce costs, then everything will be well.

I cannot help feeling that the building owners are not only paying prices which are too high, but are not always getting a fair deal from the industry as a whole, as far as the standard of workmanship is concerned.

The Reinforced Concrete Association recently held an open forum, in which I participated as one of their guests, to discuss the problem of training supervisors within their industry. To their credit they realise they have this problem, and what's more are seeking its solution. If it is any consolation to them this problem is shared by the remainder of the building and civil engineering industry, for the need for an all-round improvement in the quality of workmanship is very evident to those of us who spend our time on the sites on behalf of the clients.

But is the difficulty of our daily task always fully appreciated, by architects and engineers especially, under whose direction we perform our duties? With the greatest respect I think not, and to those of their number who read this I would say, "You have a part to play in this all-round effort too, a major part. First, see that the client's representative appointed is a fully qualified man, and, having installed him, give him your full and unstinted support, for his is at best a difficult task the conscientious carrying out of which does not always promote a pleasant atmosphere. But if he is prepared to face that in order to obtain the desired results, then surely the least he can reasonably expect from you is your full support."

Now to contractors. Are they doing all they can to bring about this desirable improvement? They have their problems too, we appreciate that, both with materials as well as labour, but I consider, again with all due respect, that not all building contractors are sufficiently perturbed, even if they are aware of it, that such shoddy work is turned out at times. To those of them who have read this far I would say, "You have a part to play in this all-round effort too, to ensure that your staff fulfils your part of your contract with the building owner. On most jobs, bills of quantities and/or specifications are contract documents. No clerk of works is entitled to ask for more than is in those documents, but he is entitled to expect everything that is, for remember your estimator put your price to the standards contained therein."

Now, you might well say, "What are you as clerks of works doing?" Well, in our own organisations we are endeavouring to ensure that only fully experienced and qualified men enter our profession, and trying to instil into those around us the urge to do a job of which we can all be proud. At the moment, unfortunately, we are unable to prevent undesirable persons calling themselves clerks of works and obtaining positions as such, but we are trying to obtain registration, which would prevent this happening, if achieved. Personally, I spare no effort in my attempt to help the respective foremen in every possible way, and so making it easier for them to do their job successfully. I have been told that I expect too much, even of myself, as well as from others, but I make no excuses for such aspirations, and maintain that if I myself am prepared to live up to such standards, then I am entitled to look for them from others. This I think is the standard we should all set ourselves; satisfy our own consciences that we have put our best into the job, then no man can have cause to criticise.

Finally, I would say that this improvement has got to come, for all of us, whatever the part we play, have a duty to those who "pay the piper." The fact that there is room for improvement is readily admitted by all, but too often passed over apathetically because it is easier to take the line of least resistance, and try to justify it by making excuses for it. I think the biggest contributory evil of all is the bonus, or incentives, or whatever it might be called. Basically it is piecework, and as such is the worst thing that ever happened to us. So let's face the facts, which speak for themselves, for most post-war work will remain with us for the next 50 years or so, much of which will remind us of this transitional period when we were too often prone to make excuses, rather than seek the cure.

R. EVANS [MICW].

71, Vicarage-lane, Seven Kings, Essex.

To the Editor of *The Builder*

SIR,—It's as simple as that, is it, Sir Richard Coppock? Surely you don't honestly believe that the building industry is wholly composed of simpletons. In your letter to *The Builder* of April 10 you conveniently omit all reference to the Second and Third Girdwood Reports, and the more recent Bailey Report, all of which make unpalatable references to low productivity on the part of the building trade operative. This is too well known and can be proved by any building concern, including my own, for Sir Richard to attempt such platitudes.

Why were bonus schemes introduced into the building industry? Because the operatives said, in effect, "We are now in a Welfare State, and we will only do a fair day's work if you give us more cash." The employers could not agree to increased pay unless it was related to increased output.

Bonus targets today are framed mainly as an insurance against still lower productivity and are very generous indeed compared with the period when unemployment existed in the industry.

Your correspondent says that the building trades unions have no rule referring to restrictions of output; this may be true, but his members do restrict output, rule or no rule.

Throughout the discussion in your columns, little has been said about the price of building materials (which are equal to approximately two-thirds of the cost of a house) and the price fixing rings which control them. When will the Government, really intent on reducing the cost of houses, refer *all* the building price rings to the light of full publicity and act on any report of the Monopolies Commission?

A. HARTLEY, Works Manager,
Corporation Works Department.

Burnley.

To the Editor of *The Builder*

SIR,—The letter from Mr. E. J. Harrington, in your last issue, is extremely interesting, and, apart from again raising the much-discussed problem of "graduated craftsmen," also strengthens the case for the adoption of incentive schemes as a means of reducing building costs. This is in spite of Mr. Harrington's bricklayer friend who claims "my bonus does not affect the cost of the work, and I am the only one who benefits"; if this is so he must work for an unusual employer if he receives the full amount of the time saved. Payment made to employees is generally between 50 per cent. and 66⅔ per cent. of the total saving.

On the question of output, there are no reasons for believing the unions will alter their basis for standards of output, and this must be accepted, however reluctant one may be. It is well known that output varies from man to man, and no-one can fairly reject the principle of "extra pay for extra work," especially as with efficient incentive schemes the extra pay does not increase the cost of the work, but actually reduces it. Would it therefore not be better if, instead of lamenting the low standards of output we are compelled to accept to-day, incentive schemes were used to provide extra pay for extra work and the resulting increases in output used to help reduce the present extremely high cost of building?

"CAINITE."

Surrey.

SELLING PRICE OF HOUSES

To the Editor of *The Builder*

SIR,—I endorse every word of "Spero" in his letter of your last issue "Selling price of post-war houses." This artificial control is a piece of mean legislation lingering on from year to year, and should be swept away as was its bedfellow "development clause." In addition to the case of an owner having to move elsewhere and so suffering a big financial loss in providing another house at to-day's prices, there is also the case of the owner who wants to borrow money for business reasons but cannot get more than the maximum controlled price from the Building Societies. In my case if this control were dropped I could increase my mortgage by 50 or 75 per cent. above the controlled price. This is not a question of "cashing in on the housing shortage"; it is but asking for plain justice and to no one's disadvantage, because houses are freely available to-day (licences within the 1,000 sq. ft. limit being automatically issued on application). I wrote to my MP last year about this matter when it came up for review in the House of Commons, and if everyone similarly placed wrote to their MPs, we would soon see the end of this purile restriction. If it is allowed to continue, this control will operate adversely in a similar way to the Rent Restriction Acts—that is, the owners will say "why should I continue to improve or keep my house in repair if its value is fixed so low that it is uneconomic to do so?"

G. O'REILLY.

Graynolds-lane, Shirley,
Birmingham.

To the Editor of *The Builder*

SIR,—I am in complete agreement with all that "Spero" says in his letter in your last issue. Cars have no covenant, why should houses?

Post-war houses have steadily increased in cost since 1946. One needs only to bear in mind the increase in men's hourly wages, broken time, holidays with pay, etc.: all have steadily increased since 1946. These costs are passed on. The lifting of this control is long overdue; its purpose is finished.

PATHFINDER.

CLERKS OF WORKS' FUNCTIONS

To the Editor of *The Builder*

SIR,—It would be unfair to your readers to allow your learned correspondent's (Norman P. Greig: "Some Aspects of Building Contracts—4") reference to Clerks of Works and the RIBA standard form to go without challenge. To state that a clerk of works' function is to act solely as inspector on behalf of the employer under the direction of the architect does not give anything like a true picture; it may be a means of misleading the uninitiated; and could be dangerous to the clerks of works' profession as a whole. The omission to describe the duties, status and authority of an inspector makes it difficult to differentiate between this *ad hoc* power and the clerk of works' *omnibus* functions; at least one of which has been accepted as trade and standard practice during the 700 years of their known history, i.e., they may also act as representatives of the employer and/or architect.

It is enlightening and interesting to read some of the lists of duties attached to application forms for posts offered by local and other authorities through the columns of *The Builder*. Some of these lists are so extensive that realisation is immediately focused on the importance municipalities and similar corporate bodies place on the functions additional to the mere inspection of works.

The phrase "under the direction of the architect" when referring to inspectorate duties should not be read to imply restraint, but rather that the architect may direct extra and special inspections as merited by the particular contract.

The coupling of clerks of works' functions and the negation of right to usurp architects' functions can be mischievous in the same sentence. This association of ideas might even be interpreted to imply acts beyond the rights of a relator and even the actual appropriation of architects' responsibilities, although this would appear ridiculous to experienced clerks of works who usually have sufficient burdens without attempting unauthorised acquisition of powers which may lead to an unpleasant disciplining.

Later on Mr. Greig, in sharp contradiction to what he has already said, associates the clerk of works with the ability to "carry on" the architect's duties summarised in Article 1 of the RIBA form. This also is not the case.

The architect's responsibility (e.g., loyalty, professional duty) to the employer, must undoubtedly abide by the maxim *delegatus non protest delegare*, but there appears to be no reason or code of practice why he should not permit a clerk of works or junior member of his staff to carry out differing functions on his behalf subject to the architect accepting responsibility for his agent's torts to the extent of relieving the employer of any liability. Much the same position obtains daily in the case of other professional men such as lawyers, doctors, etc.

Even so the clerk of works has a direct responsibility to the employer to inspect, and in the case of local government appointments a special duty to act in such a manner that not only is justice done but that it is manifestly and undoubtedly seen to be done.

Article 8 of the RIBA standard form clearly defines the right of an employer to appoint a clerk of works with one *ad hoc* power—that of inspector. Nowhere does the form say he *must* appoint a clerk of works, nor does it attempt to exclude additional powers, functions, duties, authority or actions outside the scope of an inspector. In point of fact Article 1 specifically presupposes that a clerk of works will give instructions. Surely it is commonplace in business and other occupations to permit one to allow another to act as agent for specific, if limited, acts of attorney and instrumentality—which is precisely what an architect does when he delegates authority to a clerk of works to administer and supervise the contract in his absence. Nor is this agency limited to the site of the works; a clerk of works may be required to act on behalf of the architect away from the site in consultants' offices, at specialists' places of manufacture, etc. A clerk of works is often empowered and expected to act within the broad lines of the architect's "briefing" without attempting the almost untenable position of accounting for every minute detail of his actions, and in this way is afforded some license to deal with trade and technical problems, experience of which is a clerk of works' speciality. And there are still appointments which bestow very full powers on the clerk of works almost comparable with the standard form's "architect."

In effect the employer authorises the architect to direct a clerk of works on such duties as are expedient to the particular contract always having regard to the ability of the clerk of works to perform his prime duty as inspector. The authority delegated is necessarily variable and compatible with the peculiarities of the particular job, and avoids conflict with the architect's position by being extensible and retractable as directed by the architect. Where the standard form is used it is paramountly within the architect's province to determine to what extent *ex officio* functions are afforded the clerk of works.

There is little looseness about a clerk of works' actions, his regular reports and the contractor's duty to confirm instructions; provisions for appeal and arbitration leave small scope to risk moving outside the extent and intentions laid down to him when briefed by the architect.

Failure to recognise or unwillingness to accept the responsible part taken by clerks of works in contemporary building and civil engineering has led to much misunderstanding and not a little hardship.

H. E. CAMPBELL [MICW].
40, St. Paul's-road, N1.

SPAB CONFERENCE

THE Wind and Watermill section of the Society for the Protection of Ancient Buildings held a conference on April 18 to discuss ways and means of securing the retention of watermills, of encouraging the public to take an interest in the subject and of obtaining records of mills past and present for the country-wide survey being made by the section. The conference was held, by the kind permission of Mr. and Mrs. Horsfield, at the Deans Mill, Lindfield, Sussex. This is the last of the working mills on the Sussex Ouse.

During the day papers were read by Mr. Paul N. Wilson, AMICE, on the History of Watermills and by Miss E. M. Gardner, OBE, on Historical Research and Recording of Watermills.

INCORPORATED CLERKS OF WORKS

Annual Meeting and Dinner

THE seventy-first annual general meeting of the Institute of Clerks of Works of Great Britain Incorporated was held on April 11 at the RIBA, 66 Portland-place, W1. This was followed by the Coronation year annual dinner at Church House Restaurant, at which the guest of honour was Mr. Lockhart W. Hutson, FRIBA, P-PRIAS.

Some 84 members attended the meeting at which Mr. W. B. Douglas, retiring president, took the chair, with the president-elect, Mr. F. H. Peck, ARSanI, as vice-chairman. The usual business of the meeting was conducted, during which time Mr. Douglas handed a cheque for £355 to the honorary treasurer, Mr. C. A. Linge, being the total collected for the Benevolent Fund during his year of office. Mr. W. B. Douglas then installed Mr. F. H. Peck as president of the institute for the ensuing year.

Mr. H. J. Hallett becomes vice-president of the institute, and was presented with his badge of office. Mr. G. Harris, present editor of the Journal, was re-elected to carry on with his good work. The re-appointment of Mr. W. J. Gibbins as general secretary was greeted with acclamation. The following were elected to serve as members of the committee for the next two years: Messrs. W. B. Douglas, E. H. Elderfield, F. S. Hassell, R. Harmer, A. W. Ridgers, and G. Styles.

Delegates from Northern Ireland, Scotland, North and North-West of England and the Midlands, gave a report on their various Chapter workings.

Increase in Membership

At the dinner which followed, the toast of "The Institute of Clerks of Works" was proposed by Mr. LOCKHART HUTSON, who, in a humorous and interesting speech, referred to the "amazing increase" in membership, especially in Scotland, where he was sure the Chapter was on a strong foundation. The value of clerks of the works' practical knowledge, he said, that could be brought to bear on problems in the preliminary stages could not be overestimated. He urged members not to be over conservative in ideas but to have an open and receptive mind to new values.

The response to this toast was made by the PRESIDENT, who expressed the Institute's pride and pleasure in having Mr. Lockhart Hutson as principal guest, together with so many eminent architects, engineers and surveyors. Mr. Peck mentioned the necessity for maintaining the highest standard of craftsmanship in building and hoped the incentives for production would not curtail and eventually lead to a loss of that pride of work that meant so much to our British way of life. He also expressed the wish that the institute would be consulted on practical problems connected with the erection of buildings. He was sure that the institute, with its 1,200 members, could offer some valuable advice.

The toast of "The Architects, Engineers and Surveyors" was proposed by Mr. P. J. Luxton, MBE, past-president ICW, and responded to by Mr. S. H. Loweth, FRIBA, Kent County Architect, and Mr. F. W. Smitherman, FRICS. The final toast, to "Our Guests," was proposed by Mr. H. J. Hallett, vice-president, and responded to by Lt.-Col. H. C. G. Cartwright-Taylor, AMICE.

SOME ASPECTS OF BUILDING CONTRACTS—7

By NORMAN P. GREIG, BA, Barrister-at-Law, FIArb, FRSanI

The Preliminary Meeting

IT is assumed that notification has been given to the arbitrator that his services will be required to hear the dispute. From that moment it is advisable, to show his impartiality, to have no communication with either of the parties without acquainting the other or, if a written communication has been sent, forwarding a copy to the other party.

Usually, the arbitrator, now aware that his services are to be required, will call a preliminary meeting of the parties and their solicitors, if legally represented. During this sitting it is usual to settle which of the parties is to be the claimant and which the respondent and, a very important matter, the points of claim and defence, i.e., the pleadings. The result is that the arbitrator is made aware of the actual matter in dispute, devoid of any inessentials, but no evidence is produced—that must be left to the hearing itself. Sometimes in settling the pleadings the solicitors for the parties may require certain particulars, when not satisfied either with the claim or the defence; but, for this brief sketch, let it be assumed that agreement has been reached as to the pleadings. The arbitrator, after consultation with the parties, will then decide the place and time for the hearing, after studying the convenience of the disputants, and will issue "directions" ordering the delivery of the points of claim within 14 days from the date of this document, and points of defence (and counterclaim, if there be one) within a further 14 days. He will also order the delivery of a list of the documents relating to the matter in dispute, etc.

The Proceedings

The arbitration itself is a judicial proceeding, but as a rule will be of a much less formal type than a court hearing. These days, various institutions seem to have a flair for "Mock" or "Practice Arbitrations," as they are sometimes described. Reports of these hearings (and the meetings themselves are often most valuable, especially to students and others unaccustomed to such tribunals) sometimes show an inclination to introduce a little too much of the humorous element. Unexpected flashes of both wit and humour often arise in court hearings and arbitrations, but the dignity of the proceedings in the latter hearings should always be kept in the forefront. The arbitrator, if he wishes, can hear evidence on oath, but, as a rule, particularly where the witnesses are professional men and often of high repute, he will dispense with the formality. The hearing itself will follow the procedure in court, viz:—The claimant will open the case, his witnesses will be examined-in-chief, and cross-examined by counsel (if instructed), then the respondent's witnesses will be treated correspondingly and his counsel be heard. It is customary in most cases to have, by agreement, the services of a shorthand-typist, so that a proper recording can be made of the hearing. This may turn out to be useful in case it becomes necessary for the arbitrator to state a case for the opinion of the court, or an award is remitted to the arbitrator for some irregularity in the proceedings. (See below.)

The arbitrator will ask any questions he wishes as the hearing continues, but what he will not do is sum up as would his *vis-a-vis* in a court of law. When he is satisfied that he is in possession of all the facts he needs he will say so, thank all those who have assisted him, announce that he will deliver his award in due course, and terminate the proceedings. Rarely does he give his award at once. He is not as a rule, unless the arbitration agreement binds him to deliver his award by a definite time, bound to give his decision within any particular time, but he is at least expected to give it within a reasonable time.

So far we have assumed that no question of law has emerged in the course of the proceedings which has not been capable of being settled there and then, but (as is so often the case) the dispute is sometimes found to be closely bound up with a question of law. Under the Arbitration Act, 1950, S. 21, the arbitrator can (or must if directed by the court) state a question of law in the form of a special case for the opinion of the court.

Stating a Case

A question of law can arise either in the course of the reference or in the award itself, or part of it. We will assume the former. The arbitrator is not bound to accede to the request of one of the parties to state a case, but the party, if refused, can request an adjournment to make application to the court to direct the arbitrator to state a case, and persistent refusal by the arbitrator may be regarded as "legal misconduct" which may result in the award being later set aside by the court.

Assuming the arbitrator has decided to state a case, he is entitled (and he would be wise to do so) to get legal assistance in settling its terms: of course, the counsel taking part in the hearing will invariably offer their help in this matter. But when "settled," the case must clearly state the facts that the court is to be asked to decide.

It may then become necessary to adjourn the proceedings until such time as the decision of the Court on the question of law has been obtained, but it is open to the arbitrator to give an interim award depending upon the decision of the court on the particular question of law, thus saving time later on. He will do this by giving alternatives.

Referring Back to the Arbitrator

But stating a case, as briefly described above, may not be the only set-back involving delay that can arise out of the reference.

Under sec. 22 of the Arbitration Act, 1950, the High Court or a judge can from time to time remit matters referred, or any of them, to an arbitrator or umpire. (Under sec. 8 of the Act, when matters are submitted to two arbitrators, they must, before entering upon the reference, appoint an umpire, to whom is to be referred matters upon which the two arbitrators cannot agree.) Should the award be remitted then the arbitrator has three months in which to make his award, unless some other time has been stated. Should remission involve a new hearing, then the arbitrator will have to fix a new date for it. A number of matters can lead to remission, e.g., a patent defect on the face of the award, a mistake admitted by the arbitrator which he wishes to correct, fresh evidence becoming available, not reasonably discoverable before, that might affect the award; the making of an award that is erroneous, uncertain, inconsistent and ambiguous, irregularity in the proceedings, and so on.

Further General Matters Concerning the Award, etc.

1. The award should be in writing and comply with any special directions contained in the arbitration agreement.

2. Subject to what has been explained above in regard to questions of law, etc., it should be considered as a final settlement of the dispute between the parties.

3. It is the award of the arbitrator himself. (Space will not permit of an explanation of the position of a legal assessor in an arbitration by consent of the parties.)

4. While no particular form is required the award must be definite in meaning and not given as a mere opinion.

5. When the award has been drawn up, the arbitrator will notify the parties that it may be taken up on payment of his fees. (As his fees will form part of the costs of the hearing and the arbitrator has the power to apportion the costs between the parties at his discretion, the parties can enter into an agreement in regard to payment of fees so that the award can be taken up, and then submit to the payment of costs as laid down in the award. But the costs may be made costs in the arbitration, and payable by the loser.)

6. Once an arbitrator has been appointed, such appointment can only be revoked by the court; should he die before entering upon the reference or before the award is given, then a new arbitrator must be appointed in the manner usually laid down under the agreement. (e.g., see clause 26 of the RIBA form.)

7. Once the award has been published no alteration save correction of clerical errors is permissible (Arb. Act, 1950, s. 17).

8. The award, when given, can be enforced like an order of the court.

Finally, it is hardly necessary to add that submission to arbitration of such matters as quality of materials, or under clauses 3 and 4 of the Articles of Agreement under the RIBA Standard Form (where the contractor is exercising his right to object to the appointment of a new architect or surveyor) can be of a much simpler form than has been described above, and the services of counsel, etc., dispensed with.

(Concluded.)

COLOUR OF SHOPFRONTS

Divergent Views at Redditch

HAS the planning officer a right to tell a shopkeeper what colour he must have for the front of his premises? Redditch councillors think not, and that is why they decided at their planning committee meeting recently not to support the officer's decision that the fascia and pilasters of a new shopfront in St. George's-road should be in either primrose or green vitrolite.

"They will be telling us what colour to paint our houses next," said COUN. F. CARDY. "If this shopkeeper wants to colour the front of his shop primrose or green by all means let him do so, but he should not be forced to have these colours."

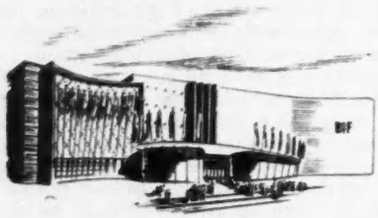
The clerk, MR. W. IRVING WATKINS, said: "One of the biggest arguments in favour of planning is the eyesore of grotesque factories and shopfronts which result from lack of planning."

The planning committee will recommend the council to refer the whole matter back to the county planning officer.

BRITISH INDUSTRIES FAIR

Review of Exhibits

The 1953 British Industries Fair opens at Castle Bromwich (Birmingham), Earls Court and Olympia (London) on Monday, April 27, and remains open until May 8. Below is our review of exhibits.



CASTLE BROMWICH

Plant and Machinery

Auto Diesels, Ltd., Uxbridge, will exhibit a lightweight 2-in. pump capable of outputs up to 7,000 gph and heads up to 80 ft., which weighs under 90 lb. Three electrically driven models in the sizes 2 in., 1½ in. and 2 in., will be exhibited, together with " Mudmaster " diaphragm pumps, available in 3-in. and 4-in. sizes and powered by air-cooled petrol engines. The company will also exhibit selections from their range of petrol and diesel engine-driven electric generating sets from 120 W to 60 kW. One item will be a 25 kVa equipment, incorporating the new Ford industrial diesel engine, for mobile workshops or oilfield use. (Stands C, 728 and 1229, Outdoor.)

In addition to their range of road rollers and constructional equipment, **Aveling-Barford, Ltd.**, Invicta Works, Grantham, will be exhibiting for the first time their ½ cu. yd. dumper. This is a three-wheel machine powered by a 4.5-bhp single-cylinder petrol engine. Gravity tipping is employed, and a wide low hopper can be positioned to give a level base for carrying piece loads. An interchangeable deep hopper is available for carrying light loads and, with the standard hopper, the machine carries 1,350 lb. of earth or 7 cu. ft. of wet concrete. Its speed is 3½ mph, both forward and reverse, and the turning radius is 6 ft. 2 in. Another item of plant on the stand will be the Aveling-Austin 99-H grader with four-wheel drive and steering. Dumpers will be on view varying in capacity from ½ cu. yd. to 4½ cu. yd., together with a trench-cutting machine and a calfdozer. (Stand 1217 and 1116, Outdoor.)

The Benford power barrow. (Benford, Ltd.)

The exhibits of **Benford, Ltd.**, Warwick, will include concrete mixers and mechanical wheelbarrows and dumpers. The main exhibit is a mechanically propelled petrol-driven wheelbarrow, which has been designed to negotiate rough, soft ground. Its overall width is 2 ft. 7½ in., and the body has a heaped capacity of 8 cu. ft. It is understood that this barrow will climb a gradient of 1 in 6 with a load of 600 lb. entirely under its own power. The engine is of the four-stroke, air-cooled type and is understood to consume about a gallon of petrol a day. (Stands 1211 and 1110, Outdoor.)

A comprehensive range of centrifugal pumps will be on the stand of **James Beresford & Son, Ltd.**, Marston Green, Birmingham. Their range includes the " Stork " single-stage, self-priming pump available as an electrically or petrol-engine-driven unit, or with fast and loose pullies for belt drive. They can be supplied mounted on a wheelbarrow-type trolley, are made for outputs of 150 to 1,200 gph, heads up to 180 ft., and are self-priming up to 27 ft. Other pumps include a 2-in. contractors' pump; sump or cellar drainage pumps, automatically operated; and an automatic pressure water system, to provide a private water supply at adequate pressure. (Stand C, 405.)

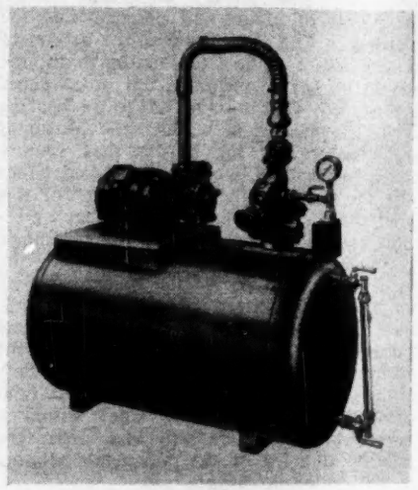
The main feature on the stand of **Blackwood Hodge & Co., Ltd.**, 11, Berkeley-street, W1, will be the " Euclid " bottom-dump wagon, with a 13 cu. yd. struck capacity and 15.1 cu. yd. heaped capacity. Powered by a Leyland six-cylinder engine giving 154 hp at 2,000 rpm, it has one reverse and five forward gears, and a maximum speed of nearly 30 mph. Other equipment to be shown includes the " Carlisle " grader; angle-dozing equipment for " Caterpillar " tractors; and the " Euclid " tractor and scraper unit. (Stand 1305 and 1204, Outdoor.)

Blaw Knox, Ltd., 94, Brompton-road, Kensington, SW3, will exhibit a comprehensive range of earth-moving equipment, including a " BK-Fifty " excavator with 40 ft. dragline attachment; scrapers; together with Fowler " Challenger 3" and David Brown " Trackmaster 50 " tractors with Blaw Knox hydraulic angledozers and cable control units. A display of concrete wall and slab construction will feature " Blawform " shuttering, " Hico " centring, the " Junior Weighbatcher," " Rex " 12S high-mounted concrete mixer and concrete pump. The concrete pipeline from the pump is taken up vertically to show its versatility in pouring slabs on multi-storey structures. " Hico " will be shown in a wide variety of applications, including flat slabs, and vaulted and barrel arch roofing. (Stand 1303 and 1202, Outdoor.)

The exhibits of **The British Oxygen Co., Ltd.**, will include the " Argonaut " welding process, an automatic welding technique using an inert gas shielded arc with a consumable electrode. The " Argonarc " spot welding equipment will be demonstrated, and a range of cutting and welding blowpipes will be shown. Demonstrations will be given on the 55-in. Universal cutting machine fitted with an MC 12 cutter, and a 36-in. UCM, both using " Cutogen " one-piece nozzles. Both of these machines are understood to be adaptable for powder cutting for profiling stainless steel. Other exhibits will include a range of ancillary equipment and welding materials for fabrication and repair work. (Stands D, 200 and 100.)

The range of hydrovane portable compressor plants exhibited on the stand of **Alfred Bullows & Sons, Ltd.**, Long-street, Walsall, Staffs, will include the type PR.303E, which is a small self-contained unit. The compressor weighs 42 lb., and the 1/3rd hp motor can be connected to any single-phase supply point. The plant can be used with a pressure-feed paint container where large areas have to be painted. A 10-ft. wide water-wash spray booth will be in operation, and there will also be displayed a complete range of spray guns, pressure paint containers, air-filter and reducing valves. (Stands D, 743 and 642.)

***Colour Sprays, Ltd.**, Heath-street, Hampstead, NW3, will be displaying a comprehensive range of spraying equipment and air compressor plants. Special types will be shown for such work as glass and plastic silvering, lining, extrusion of solids and spray guns designed for acid base fluids and spraying steam. The exhibits will also include a range of stationary air compressor plants, also the portable type with electric motor or petrol engine. An oil-less low-pressure spraying outfit, type " CR," will be shown. Amongst the specialised products will be air-filter sets, reducing valves and a fume-extraction unit. (Stand B, 500.)

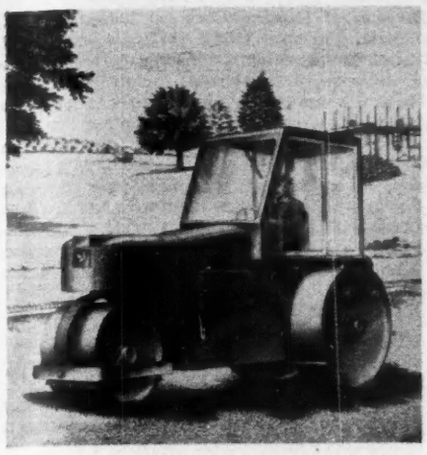


The Beresford automatic pressure water system. (James Beresford & Son, Ltd.)

The main feature on the stand of **Desoutter Brothers, Ltd.**, Stock Exchange Buildings, Great Charles-street, Birmingham, 3, will be pneumatic multiple torque units for the simultaneous tightening of grouped nuts. All units are powered by the SR.50 pneumatic motor, developing nearly 3/4 hp with a 500 in./lb. torque. Also showing will be four two-speed portable heavy-duty electric drills of 5/8 in. and ½ in. capacity, fitted with .35 hp motors, and either key-type chuck or Morse taper sleeve as standard. Electric drill guns and screw guns will be displayed, with miniature screwdrivers, standardised die sets, and other pneumatic tools. (Stand C, 412.)

Diesel Equipment, Ltd., Cowley Mill-road, Uxbridge, Middlesex, will be showing a selection of equipments from their range of diesel generating and welding sets. Of particular interest will be the new " Albion-D.E.L." set incorporating the Albion Motors EN-286 diesel engine. The set is rated at 40 kVa, and is available in all standard voltages, both AC and DC. Also on view will be a 5.5 kVa fully automatic generating set, suitable for farm and domestic lighting, and a 300 amp single-operator mobile welding set. Both of these are powered by the Armstrong Siddeley air-cooled diesel engine. (Stand 1229, Outdoor.)

The main exhibit of **Dixon Hawkesworth, Ltd.**, Middleton, near Manchester, will be their 3/3½ ton LR 6 road roller, driven by a vertical twin-cylinder four-stroke air-cooled diesel engine operating at 1,500 rpm. The heavy steel-plate rolls revolve on totally enclosed ball-races and have provision for water ballasting. Adjustable front and rear scrapers are fitted, and the plate-type reversing clutches are hand-controlled. Internal expanding brakes on each rear roll are



The 3/3½ ton LR6 road roller. (Dixon Hawkesworth, Ltd.)

hydraulically pedal-operated for bringing the roller to rest, and mechanically hand-operated for parking. Extra fittings include gravity-feed water sprayers with large capacity water tank, and driver's cab. (Stand 1302, Outdoor.)

Among the items displayed by **Dunlop Special Products, Ltd.,** Fort Dunlop, Erdington, Birmingham 24, will be a rubber carpet anti-vibration mounting. This comprises studded mats with the studs alternately spaced at 3 in. pitch, so that a stud on one side is centrally disposed in relation to four studs on the other side. It is intended for use in the foundations of heavy machinery, and is claimed to permit the "foundation mass" to be insulated from the surrounding floor or structure. The compound of the mat is controlled, and can be varied in load-carrying capacity. Stands D, 623 and 522.)

Felco Hoists, Ltd., 17, Victoria-street, Westminster, SW1, on their outdoor stand, will display the "Felco" lorry loader which is permanently fitted to the vehicle chassis and when not being used is housed under the lorry floor. It is understood that the capacity load of 10 cwt. can be raised in 30 seconds by one person and lowered to ground level in about 15 seconds. There are no projecting parts. The hand-operated winch is self-sustaining, the platform remains horizontal throughout its travel. Fitting is effected without alteration to the chassis. (Stands D, 247 and 146, 1235.)

The main exhibits on the stand of **J. H. Fenner & Co., Ltd.,** Morfleet, Hull, will include V-belts with the load-carrying cords made from high-tenacity filament rayon to give greater tensile strength and power capacity, and a higher modulus. Another feature of the Fenner stand is to be the "C" section, 7/8 in. wide, taper-lock pulleys, hitherto available only in ½-in. and 21/32-in. wide grooves. These pulleys eliminate the use of flanges, set-screws and the need for keys and keyways, and the range available in "A" and "B" sections will also be on show. Subsidiary displays will show the "Hainsworth" variable speed V-belt drives, "Platt" clutches of four different types and the standard range of leather and textile flat beltings. (Stand D, 406.)

The exhibit of ✱**H. E. C. Compressors & Engines, Ltd.,** Stechford, Birmingham, 9, will comprise a range of air compressors, together with complete automatic units. These compressors are single-stage, air-cooled, operating generally at a maximum pressure of 150 lb. per sq. in. The range of displacement is from 2 to 16 cu. ft. per min. Both stationary and portable models will be on view, mostly available with either electric motor or petrol engine drive. On show for the first time will be the Mark 1 dual-purpose air compressor fitted with "Masterspray" unit. This model comprises a 2½ cu. ft. compressor direct-coupled to a ½ hp electric motor, mounted on a 12-in. dia. by 24 in. air receiver fitted with wheels. It can be used for such building maintenance as whitewashing walls or spray-painting. (Stand D, 739.)

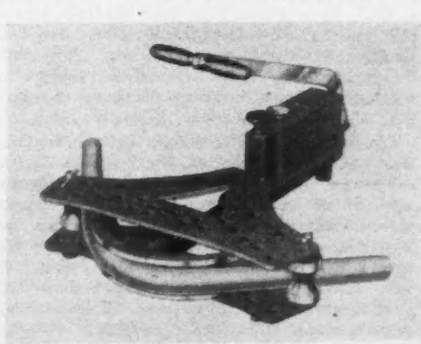
The exhibits of ✱**I. T. D., Ltd.** (Industrial Truck Development), 95-99, Ladbroke-grove W11, who are in association with Austin Crompton Parkinson Electrical Vehicles, Ltd., will be exhibiting a range of fork lift trucks and associated materials handling equipment. These will include the battery-electric "Stacatruc" model 45EH/9, a heavy-duty fork lift truck, designed to meet current export requirements. The suspension system is designed so that the forced rise or fall of either steering road-wheel causes a vertical displacement of the truck of only half the wheel displacement. The lifting mast and forks are carried on the forward drive axle, and have a lift height of 9 ft. Maximum loadings are 4,500 lb. at 20-in. centres, and 4,000 lb. at 24-in. centres. (Stand 1356, Outdoor.)

Shown on the stand of **C. H. Johnson (Machinery), Ltd.,** Adswood-road, Stockport, will be their flex-drive internal concrete vibrator. This has a frequency of 10,000 vpm, an amplitude of 1/16 in. approximately, and an acceleration of 150 g. Drive is by a 4 hp Villiers four-stroke petrol engine or 3 hp squirrel cage electric motor. Also displayed will be a range of centrifugal pumps, and a 3-in. mud pump with a delivery head of 20 ft. and capacity of 3,000 galls. per hour. Other items will include a rammer with an interchangeable base; conveyor and a 1 cu. yd. diesel dumper. (Stands 1337 and 1236, Outdoor.)

W. Kennedy, Ltd., Station Works, West Drayton, will be showing their full range of machines for the cold bending of tubes and sections in all metals. Special machines to suit various trades will be displayed, including light-gauge copper tube benders; benders for screwed and split or alloy conduit and universal benders for tubes, angles and other sections. Bar benders for bars up to 2-in. dia. bent cold will be exhibited, as well as sharp bending attachments for small rods and stirrups. (Stand D, 326.)

The range of precision pipe bending machinery displayed on the stand of **Lawler, Ayers & Co., Ltd.,** 54, Old Broad-street, EC2, will be demonstrated by qualified operators. Included will be the "Laco" hydraulic pipe bending machine which has a powerful hydraulic pump unit incorporating full power positive return on the ram, enabling the pipes to be automatically ejected from the machine after being bent. Machines for bending light gauge steel, copper and brass tube will also be exhibited, as well as a complete range of hand tools for the engineering and constructional trades, including the "Laco" pipe vice and stand. (Stand D, 104.)

The stand of **Lyte Ladders, Ltd.,** Rogerstone, Newport, Mon., has a display of single and extension ladders, step-ladders, painters' trestles, tripods, etc. In addition they will be showing a turntable extension ladder, designed for mounting on vehicles, which will reach a maximum height of 25 to 30 ft. above ground level, and rotate through 360 degrees, braking mechanism being provided to lock turntable in any position. The ladder can be elevated from horizontal through 75 degrees, and will stow in the horizontal position for travelling. (Stand B, 306.)



The "LACO" hydraulic pipe bending machine. (Lawler, Ayers & Co., Ltd.)

Among the exhibits of metal spraying equipment manufactured by **Metallisation, Ltd.,** Barclays Bank Chambers, Dudley, Worcs., will be their latest tool, the Mark 30. This is an improved version of the Mark 27 motorised metal spraying pistol, and the higher powered motor enlarges the range of the tool. The motor is totally enclosed, and the standard units are 400/440 volts, three-phase, 50 cycles rating, but motors of other electrical characteristics may be supplied. The variable gear gives fingertip control, and the changing of one gauge of wire to another and from one type of metal to another may be carried out. (Stand 1348, Outdoor.)

Mono Pumps, Ltd., 67, Clerkenwell-road, EC1, will show a complete range of their pumps, including the "D" type range, one of which is demonstrated by pumping a viscous mixture. This type of pump has been associated with recent experiments with the mechanical application of cement grouts, plasters and mortars. Other uses of this pump are on well point systems and de-watering foundations, for the preparation of bulk quantities of lime, sand and mortar and for injecting cement slurry for strengthening embankments and shaft walls. (Stand D, 716.)

Newman Industries, Ltd., Yate, Bristol, will be showing their range of totally enclosed motors complying with the draft British Standard Specification CN (ELE) 6814. Also displayed will be the industrial-type motor with outputs from 20 to 200 hp, made in slip-ring or squirrel cage induction types and supplied as drip-proof. Standard industrial totally enclosed motors from ½ hp to 30 hp will be shown in a comprehensive range, and there will be two-sectioned working models of a motor driving a gear unit, as well as a working model of the "Elf" fractional hp motor. (Stand C, 518.)

The main exhibit of ✱**Jack Olding & Co., Ltd.,** Hatfield, Herts, will be the Vickers "VR-180" tractor and its ancillary equipment. This has a fully articulated three-point suspension, top speed of 9.73 mph, sealed lubricated tracks and a constant mesh gearbox with six forward and three reverse gears. The Rolls Royce six-cylinder supercharged oil engine provides a minimum of 150 Drawbar hp, and is governed to 1,800 rpm. Special attention has been paid to operating in extremes of temperature. Other exhibits will include a 14 cu. yd. open bowl scraper; rippers and power control units; finishers; and a motor grader. (Stands 1347 and 1246.)

The display of **Pegson, Ltd.,** Coalville, Leicestershire, will be devoted to their self-priming, centrifugal, plunger and diaphragm pumps. Both portable and fixed models will be on view. Among the portable pumps will be a 6-in. pump powered by a 31 hp at 1,600 rpm Lister FR4 diesel engine, with a capacity of 1,100 galls. per min., and a 4-in. pump powered by a 17 hp at 1,800 rpm Lister FR 2 diesel engine, which handles up to 600 galls. per min. These two pumps are compact units and can be fitted on four-wheel chassis, or, alternatively, on a two-wheel high-speed chassis for touring. (Stand D, 421.)

Ransomes, Sims and Jefferies, Ltd., Ipswich, will be exhibiting their MG tractor, an all-purpose tractor, powered by a single-cylinder four-stroke side-valve engine, 600 cc. capacity, with self-energising clutch. Also displayed will be an ENU8 electric truck from a range which includes trucks with fixed or elevating platforms from one to four tons capacity, crane trucks, tipping trucks, tiering trucks, forklift trucks and electric tractors. The range of forklifts exhibited will include trucks of 10 to 40 cwt. capacity, adaptable for use with varying types of load. (Stands 1317 and 1216, Outdoor.)

✱**The Rawlplug Co., Ltd.,** Cromwell-road, SW7, will be showing their wide range of fixing devices and tools. Of special interest will be a large demonstration unit showing some of the applications for "Rawlplugs," and for demonstrations of hole boring and making fixings with "Rawlplug" tools and devices a special brick and concrete wall will be erected on the stand. One exhibit will be the "Rawlplug" drill.

The Rawlplug drill hammer.
(The Rawlplug Company, Ltd.)

hammer. This is an attachment which when fitted to an electric drill converts its rotary motion to a percussion action, each revolution producing a blow, and is claimed to be capable of rapidly boring holes in the hardest of materials. To suit the different size "Rawldrills" the power of the blow can be adjusted as required. (Stand C, 707.)

The exhibit of **H. C. Slingsby, Ltd.**, 89/97, Kingsway, WC2, will consist of a comprehensive selection of sliding-wheel trucks, stack trucks, turntable platform trucks, lifting trucks, and pan-transporting trucks. Stackers will also be demonstrated on this stand, for the stacking of goods and to conserve storage space. Also shown will be a selection of steelback extension ladders and extension step-ladders, and many other types of ladders and steps. A light tubular folding foot-iron truck, weighing 15 lb., will be exhibited. (Stand B, 419.)

T & T Works, Ltd., mechanical handling specialists, Billesdon, Leicester, will be exhibiting from their range of portable conveyors and elevators. (Stands 1321 and 1220, Outdoor.)

A diesel dumper, designed for conveying materials over rough and muddy sites, or for operation in confined spaces, will be exhibited by **The Thwaites Agricultural Engineering Co., Ltd.**, Cubbington, Leamington Spa. This has a loading height of 28 in., a skip capacity of 11¼ cu. ft. flush, 10 cu. ft. wet concrete; and the tipping is hydraulically controlled. The turning radius is 6 ft., and power is provided by a Petter four-stroke, air-cooled diesel engine, which is claimed to consume less than one pint of fuel oil per hour. The engine is totally enclosed; a notable feature is the absence of a gearbox in the transmission, the drive being taken through two expanding shoe-type clutches to a conventional propeller shaft and rear axle. Also on view will be a builder's hoist with a delivery height of 9 to 18 ft., extensions being available to increase this to 30 ft. (Stand 1346, Outdoor.)

The complete range of two-stroke and four-stroke stationary air-cooled engines of ½ to 5 hp capacity, manufactured by the ✱**Villiers Engineering Co., Ltd.**, Marston-road, Wolverhampton, will be displayed on their stand. The Mark 40 engine is fitted with a "SEC" starter, and has a 12-hour continuous rating of 4 bhp at 2,000 rpm, being designed to supply a constant speed under varying loads. A 3 to 1 reduction gear is available on this model, and where required the engine can be arranged to operate on vapourising oil or paraffin by means of a vapouriser. Other exhibits will include workshop service tools and equipment and a range of industrial freewheels and sprockets. (Stand D, 341.)

Full ranges of the filtration and silencing products of **Vokes, Ltd.**, Guildford, Surrey, will be shown, as supplied for industrial purposes, and for naval and military use. Products of their subsidiary companies will also be on view in the shape of the "Genspring" constant support hanger for suspending thermal piping in power houses, refineries, etc. (Stand D, 728.)

The exhibits of **Wessex Industries (Poole), Ltd.**, West-street, Poole, Dorset, will consist of a representative selection from their range of "Wrigley" industrial trucks and trailers and will include both the 1 hp and 3 hp petrol engine-driven industrial trucks with alternative body types, including tippers and hydraulic stillages, together with electric battery-operated, driver-controlled general purpose works trucks. They will also show their small "Dumper" truck, Model 211, with sheet steel roll-tip body of 7 to 8 cu. ft. capacity, which has an overall width of 2 ft. 6 in. (but which can be supplied with wider axle as required), and is powered by the Villiers Mark XII four-stroke engine which drives through a three-speed gear box. On show also will be an electric battery-operated, driver controlled, fork lift truck rated to handle a 1,000 lb. load to a height of 7 ft. 6 in. (Stands 1335 and 1234.)

Examples from the range of builders' plant manufactured by the **Wickham Engineering Co., Ltd.**, 34, Victoria-street, Westminster, London, SW1, will be shown on their stand. This will include a 13 cu. ft. light dumper, a gear driven winch having a capacity of 5,000 lb., and a 10/15 cwt. concrete elevator fitted with a ¼ cu. yd. capacity automatic tipping skip. Other exhibits on show will include a variety of hoists, winches and pumps together with a scaffold jib and winch, a jib and jack crane and a brick barrow. (Stands 1209 and 1108, Outdoor.)

✱**Wolf Electric Tools, Ltd.**, Hanger-lane, Ealing, W5, will be exhibiting a complete range of their electric tools, and the display will incorporate a new saw, type "RS7," which is a smaller counterpart of their 10-in. saw, and is fitted with a 7-in. blade, and powered for high-speed cutting at full capacity. To the range of portable grinders is added the "GQ6," a heavy-duty model fitted with a resinoid bonded grinding wheel. Demonstrations of portable electric tools, including drills, grinders, polishers, blowers, hammer kits and chisel mortisers, will be given. (Stand C, 603.)

Structural Components and Materials

On their stand, **D. Anderson & Son, Ltd.**, Stretford, Manchester, will be showing a full range of their roofing felts, damp-rpoof courses, metal roof deckings and built-up roofing systems. (Stand B, 625.)

W. H. Colt (London), Ltd., Surbiton, Surrey, will be exhibiting their "Colterro" clay lath. The stand itself will be largely constructed with this lath stretched over a steel framework and left partly unplastered so that the construction is visible. It is understood that this lath can be bent twisted and formed to any shape and fixed rigidly. A continuous film will show how "Colterro" is fixed. Canadian Cedarwood roofing shingles will also be displayed as well as the "Colt" chimney cowl. (Stand B, 506.)

Guest, Keen and Nettlefolds (Midlands), Ltd., Box No. 24, Heath-street, Birmingham, 18, will exhibit on their indoor stand, screws, bolts and nuts of all descriptions, including self-tapping screws, recess head screws, rivet bushes and hexagon socket set and cap screws. Also shown will be fastener units, cold rolled strip, wire nails and staples, aluminium alloy nails, steel hinges and corrugated dogs. The company's outside stand will display telegraph ironwork. (Stands B, 629/526, 1325/1224.)

In addition to general displays of metal sundries in copper, aluminium and their alloys, the Metals Division of **Imperial Chemical Industries, Ltd.**, Imperial Chemical House, Millbank, SW1, will feature special exhibits showing the applications of its wrought non-ferrous metals in building. These will show light gauge copper tubes and a range of compression and capillary fittings. Modern developments in the use of aluminium for roofing purposes will be shown, with extrusions in copper and aluminium base alloys for use in structural and decorative work. Two panels will illustrate progress made in the production of wrought titanium and the various techniques employed in the welding and jointing of copper base and aluminium base alloys. (Stand D, 409, 308.)

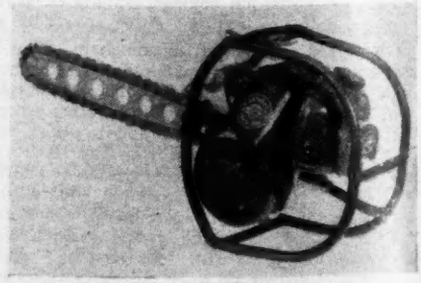
Purimachos, Ltd., Bristol, will be displaying their plastic fire cements for installing or repairing continuous-burning fires, grates, stoves or controlled-heat cookers and heaters. Staff will be in attendance to give advice on any matters in connection with their use. (Stand D, 251.)

The display of **Rapid Metal Developments, Ltd.**, 209, Walsall-road, Birmingham 22b, will consist of rapid metal formwork and allied equipment, exhibited in various applications to suit different types of concrete construction, including walls, columns, beams and slabs. Climbing shuttering, both of the double-faced and cantilever types, will also be demonstrated, together with flexible panels for forming circular and other curved work. The new S/L adjustable centring girder will be shown in its application as a support to slab shuttering. Also exhibited will be road forms of various types, and adjustable props and trench struts. (Stands 1212 and 1313, Outdoor.)

The ✱**Ruberoid Co., Ltd.**, 1-19, New Oxford-street, WC1, will be showing, on a full-scale model, examples of the application of bituminous building materials. Incorporated in the model will be sections of "Ruberoid" built-up roofing specifications, "Ruberdal" tiles, "Zylex" underslating felt and "Astos" asbestos dampcourse. Also on the stand will be a display of "Ruberoid" strip slates, surfaced with coloured mineral granules, and a bituminous caulking compound for sanitary ware and rainwater goods. (Stand B, 423.)

The exhibits of **J. H. Sankey & Son, Ltd.**, Aldwych House, Aldwych, WC2, will include a complete range of the "Sankey" refractory and acid-resisting products, including cements, firebricks and vitrified bricks and tiles. Also displayed will be "Sisalkraft" reinforced waterproof papers, including those made to Government specification for special export packing requirements. The range will include an aluminium foil-faced reflective thermal insulation grade. Another exhibit will be a one-man power chain saw incorporating the "Sankey-Aspin P 54" 5 hp engine and possessing a 32 lb. overall weight. (Stand B, 405.)

✱**Sommerfelds, Ltd.**, Wellington, Shropshire, are to illustrate the process of making more than 100,000 steel fencing stakes every month by an automatic production line. They will exhibit pressed steel door frames "knocked down" for export, which can be assembled by unskilled labour on building sites without the aid of any screws, brackets, bolts, nuts, or special welding or fitting equipment. Recent developments in



The "Sankey-Aspin" one-man power saw.
(J. H. Sankey & Son, Ltd.)

the use of re-rolled rail steel for exportable factory units and other structural steelwork will also be illustrated. Other steel products shown will include steel window frames, portable road surfaces, and various forms of structural steelwork. (Stands B, 409 add J, 30, Olympia.)

Stelcon (Industrial Floors), Ltd., Cliffords Inn, London, EC4, will be exhibiting anchor steel plates incorporated in the floor of their stand. These are understood to be dustless, hygienic, and wear resistant. The structure will incorporate storage wall units, designed to provide a quick solution to the problem of storing loose bulk materials. Made of reinforced concrete, they are self-supporting and can retain loads against either or both sides. Rearrangement or re-siting can be carried out. Information on the "Stelcon" reinforced concrete system of bicycle parking will also be available. (Stand D, 423.)

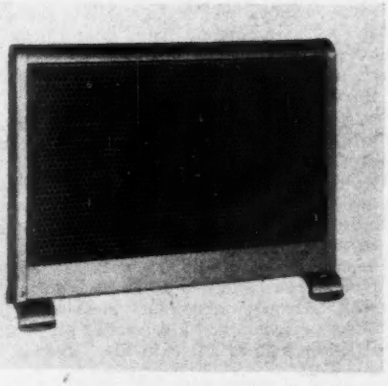
Samples of the welded hard drawn wire fabrics manufactured by **"Twisteel" Reinforcement, Ltd.**, Alma-street, Smethwick, Staffs, will be shown on the Smethwick Industrial stand. These specimens will include various types of reinforcement fabric for concrete and small mesh fabrics for fencing, machine guard screens, etc. (Stand B, 309 and 208.)

Heating and Services

The main feature of the exhibit of **Berry's Electric, Ltd.**, Newman-street, London, W1, will be the Raydair heater, a new development in electric heating. The manufacturers claim that by a new application of the convection principle it has been possible to eliminate the wasteful rearward radiation which normally dissipates heat through plaster and brickwork to the outside air. All the heat, they claim, from both front and back surfaces of the heating element is carried forward into the room, causing a more rapid rise in temperature than could be achieved by low-temperature radiation alone. The heater is equipped with a thermostat and pilot light. Standard finishes are peach bronze, penny bronze and warm silver, but others can be supplied at extra cost. In addition there will be a number of modern radiators and a full range of Magicoal and Berrylog fires, together with examples from their ranges of domestic and industrial lighting fittings. (Stands C, 507 and 406.)

Copper tubes for water, gas and sanitation services to BS 659/1944 will be displayed and incorporated in the construction of the stand of **Thomas Bolton & Sons, Ltd.**, Widnes, Lancs. Also on show will be copper tubes to BS 1386/1947 suitable for burying underground and for working pressures up to 200 lb./sq. in.; hot rolled copper sheets for roofing purposes; and copper jointing strip for concrete roads, pavements, yards, bridges, etc. (Stand D, 518.)

Industrial gas heating appliances will be shown by **Bratt Colbran, Ltd.**, 10, Mortimer-street, London, W1. A complete gas-operated, infra-red oven will be a feature of the exhibit and it will be shown with a continuous working conveyor showing how this equipment can be used to speed up a wide variety of industrial heating processes. Also on show will be their overhead radiant gas heaters, which are used for heating large buildings, such as factories, churches, and warehouses, etc. (Stands D, 656 and 757.)



The new "Raydair" heater.
(Berry's Electric, Ltd.)

British Insulated Callender's Cables, Ltd., Norfolk House, Norfolk-street, London, WC2, will be showing a wide range of electric cables and accessories, with particular emphasis on aluminium as a conductor and cable sheathing material. Among the exhibits will be LT aluminium sheathed, and LT lead sheathed cables with aluminium conductors; high voltage cables including aluminium sheathed oil filled, and aluminium sheathed IP, cables; aluminium sheathed conductors for overhead lines; jointing aluminium conductor cables in standard cable accessories; mass-impregnated non-draining cables; screened trailing cables and light weight colliery telephone cables. (Stand C, 513.)

A portable version of the "Sunbeam" all-night fire, which can be transferred from room to room, will be among the new products on show on the stand of **Chatwins, Ltd.**, Tipton, Staffs. They will also be introducing their first space-heating solid fuel stove, the special features of which are its sliding concealed fire doors and side and back convector panels. The main feature of the stand will be the new Sunbeam Superior solid fuel cooker which is claimed to be capable of heating two radiators and a towel rail and has drop oven doors, the hinges of which are concealed throughout. Other features are the use of acid-resistant vitreous enamel for the hob, the special ancillary device for hot-plate cooking and the spring-loaded heat retaining bolster. The display will also include examples of their domestic boilers, fireplace castings and top and side-oven combination grates. (Stands B, 715 and 624.)

The exhibit of **Copperad, Ltd.**, Colnbrook, Bucks, will comprise representative models from their range of heating, ventilating and combustion equipment, including their Unit heaters for use on steam or hot water, and their electrically operated Unit heaters, convectors for steam and hot water, Radiant panels and fan convectors. Exhibited for the first time will be their fan coolers for operation from a central supply of chilled water or brine and they will also be showing the Copperad "Auto Burner," which is an automatic burner for handling solid fuels including coke and coal. It is claimed to be suitable for burning coke breeze and other similar low grade fuels and can be attached to existing cast iron sectional and other heating boilers. (Stand B, 721.)

The D.P. "Kathanode" range of traction cells, specifically designed for the propulsion of electric industrial trucks, road vehicles and locomotives, will again dominate the exhibit of **The D.P. Battery Co., Ltd.**, Bakewell, Derbyshire. A range of cells based on the "Kathanode" design but adapted to meet the special requirements of marine duties and diesel engine starting on railway locomotives, will support the main display. The remaining exhibits on view will consist of a selection of D.P. open and sealed type Plante cells from a range catering for every DC duty in industry, communications and railway transport. (Stand C, 713.)

Dimplex, Ltd., Totton, Southampton, Hants., will be showing their range of oil-filled electric radiators including two new additions. The first is a flame-proof type radiator, Buxton approved, incorporating flame-proof head with ¾ in. conduit entry claimed to be suitable for spray booths, paint stores, garages, petrol stations and similar applications. The other is a new Coronation model, type ER. 316, having a 1½ kw. loading. This model is 48¾ in. long and 22¾ in. high, and is said to be suitable for installation under low windows. (Stand C, 715.)

Falk, Stadelmann & Co., Ltd., 91, Farringdon-road, London, EC1, will be showing a range of house service units, two new switches which have been introduced for surface and flush type wiring systems, Hitest cables and various items from their range of industrial lighting fittings. In addition examples from their ranges of flood-lighting and street lighting equipment will be exhibited together with a number of commercial lighting fittings. Various domestic appliances will also be seen. (Stand C, 609.)

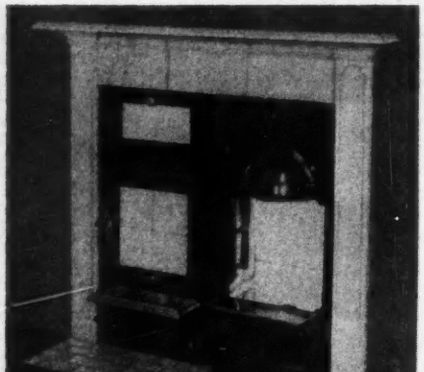
The stand of **The General Electric Co., Ltd.**, Magnet House, Kingsway, WC2, will tell the story of lighting. The display will show the simplest method of producing the bulb of a filament lamp, namely, glass-blowing, and in complete contrast to this a film will be shown of the new ribbon machine used in the factory of Glass Bulbs, Ltd., which is capable of producing one million bulbs a day. A colourful pillar fitted with fluorescent tubes will show examples of the range of lamps manufactured by GEC, including Osram tungsten lamps, fluorescent tubes, mercury and sodium discharge lamps. A section of the stand will be devoted to an historical survey which traces the evolution of the lamp from the earliest carbon filament lamp through the simple coiled tungsten filament to the coiled coil filament lamp. In addition the numerous components which make up the modern filament lamp will be explained. A further section will be devoted to industrial lighting. (Stands C, 503 and 402.)

Harris Engineering Co., Ltd., Browning-street, Southwark, SE17, will be exhibiting an oil-fired warm air heater. This is an automatic heater, provided with oil burner, pump, ignition and control gear, with a welded heat exchanger and combustion chamber and a stainless steel inner combustion chamber. There is also a built-in low pressure centrifugal fan with motor and a variable-speed drive so that the fan output can be matched to a duct system. This heater is rated at 100,000 B.T.U.s output. The firm will also show abrasive cutting-off machines working with unit dust collectors; the standard range of automatic gas unit heaters; and also steam and electric unit heaters. (Stand D, 444.)

The exhibit of **Prior Stokers, Ltd.**, 1-3, Brandon-road, York-way, London, N7, will include their pressure jet fully automatic light oil burner for hot water and steam boilers and furnaces, their Duplex burner model underfeed stoker for vertical, large sectional, shell, locomotive-type boilers and furnaces, and their bunker flow type underfeed stoker. This latter is a specialised form of underfeed screw stoker which conveys the fuel direct from the bunker to the boiler, thus eliminating the necessity of filling a coal hopper by hand or alternatively of providing elevating or conveying gear. (Stand D, 430.)

An answer to the problem of ensuring lighting continuity when failures occur in hospitals, factories and public buildings, etc., is claimed to have been reached by **Pritchett & Gold & EPS Co., Ltd.**, 137, Victoria-street, London, SW1. Representing a wide range of equipment suitable for every kind of application will be a typical automatic emergency lighting apparatus operating with a battery of 14 "P and G" closed top cells of 30 Ah capacity. The charging and control gear is housed in a sheet steel cubicle and arranged so that an interruption in the mains supply automatically and instantaneously connects the emergency lighting circuit to the battery by means of a change-over contactor. (Stand C, 702.)

On their stand, **Radiation, Ltd.**, Radiation House, Stratford-place, London, W1, will be showing a wide selection of solid fuel appliances made by the three production centres of Radiation Group Sales, Ltd. (Solid Fuel Division). They will include a range of cookers, solid fuel fires, convector grates, combination grates and heating appliances. The solid fuel unit of Radiation whole-house warming by ducted air will be shown together with a selection from their range of baths. Exhibited for the first time will be conversion fires now available to give overnight burning to Yorkist, Yeoman, Dyneley, Eagle



The "Yorkist" conversion fire. (Radiation, Ltd.)

and Belplex combination grates, and bring the advantages of a 24-hour heating service to users of these appliances; the Eagle boiler flue set Mark II; and the Loray fireplace suite. (Stands B, 501 and 400.)

The Rheostatic Co., Ltd., Slough, Bucks, will be showing a complete range of their automatic controls including the following: Immersion thermostats for domestic electric water heaters, central heating and industrial process control; control boxes for automatic stokers and automatic oil burners; photo-electric flame failure protection devices for oil burners; thermostats for control of domestic electric cooker ovens, for heavy duty cooking ranges and for industrial ovens; thermostats for the control of industrial platens; thermocouple devices for the protection of gas fired installations. (Stand C, 500.)

The latest addition to the range of stokers manufactured by **Riley Stoker Co., Ltd.,** 19, Woburn-place, London, WC1, the type "T" chain grate stoker for firing horizontal shell type boilers, will be exhibited alongside two of the company's underfeed machines. These two underfeed machines, the Baby Robot stoker and the class "B" stoker are representative of the range of stokers available which will be shown in model form. In addition to these they will exhibit an automatic kiln stoker used for firing top fired brick kilns. A further display of Syntron electric vibratory equipment will illustrate the application of various feeder machines and a spiral feeder conveyor. (Stands D, 617 and 516.)

The exhibits of **Samuel Smith & Sons, Ltd.,** Smethwick 41, Staffs., will include solid fuel combination grates, continuous burning fires, fireguards and fire sets. On show for the first time will be their "XL-Talbot" combination grate and the "Montrose" continuous burning fire. (Stand B, 301.)

The Tilley Lamp Co., Ltd., 15, Sackville-street, London, W1, will be exhibiting their new pre-heating powder called "Owlite" which is claimed to reduce the lighting of a Tilley lamp or radiator to the simplest terms. It is used by removing the wicks from the torch and dipping the torch in the powder. The filled torch is then clipped to the lamp or radiator and lit in the usual way, as for methylated spirit. "Owlite," it is said, burns without smoke or smell and is completely consumed, leaving no ash. The company will also be showing examples from their range of pressure lamps and radiators. (Stand B, 603.)

Triplex Foundry, Ltd., Great Bridge, Staffs, will be showing their "W" cooker with large boiler for the first time, connected to two radiators for background heating, together with the usual domestic hot water supply. Also on show will be their "V" cooker and "38" C/F grate and their new boiler grate, type "A". In this model attention has been paid to the design to ensure good results when burning coke. Another new exhibit will be the Triplex continuous burning 16 in. fire, a special point in this being the built in deepening plate which allows for a low fire during the day, with extra firebox capacity at night for continuous burning in safety. (Stand B, 505.)

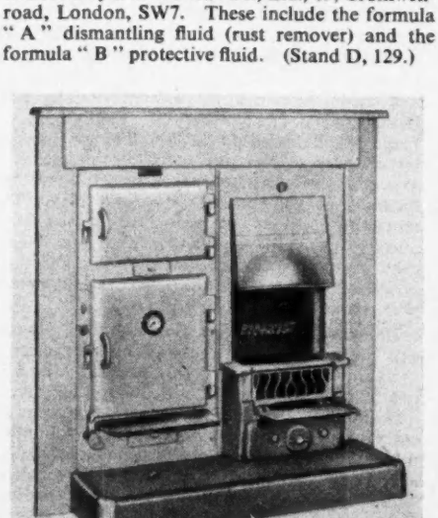
Battery equipment of specialised design for a range of applications will be featured on the stand of **The Tudor Accumulator Co., Ltd.,** 137, Victoria-street, London, SW1. The two principal exhibits will consist of a "Safetylyte" automatic emergency lighting set and a Tudor switch tripping unit employed for tripping circuit breakers at pressures of 24 or 30 volts. Of interest to users of electric industrial trucks, locomotives and road vehicles will be a group of Tudor traction batteries fitted with Porvic separators, a new microporous plastic material which is claimed to be practically indestructible in service. A representative selection will be shown, together with a crate of Tudor cells for general marine duties. (Stand C, 114.)

Paints, Finishes, Preservatives

Jenolite, Ltd., Covent-garden, WC2, will introduce their improved paint stripper and degreaser (PS/5). This alkaline chemical is in powder form, and for standard purposes should be mixed in the ratio of 1 lb. to 1 gal. of water heated to 95 degrees C, and used in a mild steel tank. This solution, it is claimed, will loosen the most obstinate priming paints (including red oxide) to such an extent that any adherent material still remaining after the normal processing will be completely removed by the following cold water rinse. Jenolite rust remover and neutraliser will also be demonstrated. (Stand B, 221.)

The Robbialac Coloriser Paints System, which will be shown by **Jenson and Nicholson, Ltd.,** Stratford, E15, is something new in the paint industry. It offers a choice of 999 colours for exterior and interior painting. This colour range is obtained by the addition of precisely measured, scientifically controlled fluid colourants to white or grey base paints. These base paints are obtainable in Robbialac enamel, eggshell enamel, suede finish wall paint and undercoat for exterior and interior use, and in various tin sizes. There are 16 Coloriser colourants in eight different sized tubes, which, used singly or in conjunction one with another give the complete range of 999 colours. (Stands B, 515 and 414.)

Samples of their anti-corrosion fluids will be exhibited by the **Plus-Gas Co., Ltd.,** 89, Cromwell-road, London, SW7. These include the formula "A" dismantling fluid (rust remover) and the formula "B" protective fluid. (Stand D, 129.)



The "XL Talbot" combination grate. (Samuel Smith & Sons, Ltd.)

Sealocrete Products, Ltd., Hythe-road, London, NW10, will be showing examples of flooring incorporating their double strength premix solution, metallic hardener, coloured cork flooring compound, and Sealantone liquid colours for cement in granolithic work. This will be in addition to an array of coloured cement work illustrating many types of finishes for wall renderings, etc. Asbestos, cement work, brickwork, etc., will be shown illustrating how Sealocrete liquid stain can make these materials colourful and also afford protection to them. For decorative finishes on cement, concrete, asbestos, brick, roughcast, etc., one of this company's latest products, "Sealantex" liquid stone compound will be well represented. This material can also be used on underwater surfaces, such as bathing pools. (Stand B, 614.)

Examples of architectural ironwork rust-proofed by the sherardising process, will be shown by the **Zinc Alloy Rust-Proofing Co., Ltd.,** Shakespeare-street, Wolverhampton. This stand will form a technical information bureau where visitors will be able to obtain full particulars of the process, its cost, and details of the uses to which it can be put in the various trades. The exhibitors do not manufacture architectural ironwork, but specialise in carrying out sherardising for the actual makers of such items as steel casements, metal trim, electrical conduit, iron door furniture, nails, nuts, bolts, washers, gate fittings. (Stand B, 724.)

Equipment and Fittings

The Airscrew Co. & Jicwood, Ltd., Weybridge, Surrey, will introduce details of their complete range of centrifugal fans, together with various units in their axial flow fan range. (Stand D, 726.)

The various types of plastics produced by **Bakelite, Ltd.,** 12-18, Grosvenor-gardens, SW1, will be shown together with their industrial applications. Amongst these will be "Bakelite" moulding materials, used for the manufacture of door furniture, electric plugs and sockets, etc. One material incorporates rubber to give improved impact strength. On view will be examples of the "Vibak" range of PVC compounds, some in the form of hard-wearing floor tiles. There will be selections from the range of hot- and cold-setting adhesives for woodworking and "Warerite" decorative laminates, as well as a sheet of corrugated roof glazing made from glass fabric laminated by polyester resins. (Stand C, 404.)

Among the exhibits of **The Bolton Gate Co. Ltd.,** Waterloo-street, Bolton, will be a pair of "Superfold" doors constructed from light steel channels and lattice bars, with a special hinged plate section to keep the leather-type face cloth taut, wherever the door is positioned. Also displayed will be the "Roly" overhead door, 16 ft. wide by 7 ft. high, electrically operated. This is manufactured from four panels and is operated either by push-button or hand control. Other exhibits will include shutter gates, doors and an "Armourplate" glass door actuated from one side by photo-electric equipment and from the other by an electronic proximity switch. (Stand B,302.)

The stand of ✱**Frederick Braby & Co., Ltd.,** 352-364, Euston-road, NW1, will be constructed of "Bar-Form" metal partitions and designed by themselves. The free standing exhibits will include steel drums for the oil, paint and chemical industries; perforated metals and perforated cable trays; and culverts. Also on display will be cisterns, cylinders and h.w. tanks; an export-type barrow, with one dozen packed for export; steel shelving; aluminium stacking drums of 3 gal. capacity; and a galvanised pressure vessel 8 ft. 7 in. high by 3 ft. 6 in. dia. (Stands B, 517 and 416.)

The British Vacuum Cleaner & Engineering Co., Ltd., Leatherhead, Surrey, will exhibit a full range of portable industrial vacuum cleaners from small

machines to the heavy units designed for removing liquids, draining sumps in machine shops, etc., they also manufacture the central fixed vacuum cleaning plant which operates on the pneumatic conveying system from a central fixed installation. BVC Industrial Constructions, Ltd., a subsidiary company, will also be represented to give advice on their pneumatic conveying systems and equipment for cleaning flues and the removal of dust and ash; and their ash sluicing and disposal systems, an ash handling technique by hydraulic means. (Stands D, 203 and 102.)

New domestic products together with specialised industrial mouldings will be shown by **E. K. Cole, Ltd. (Ekco Plastics)**, Southend-on-Sea, Essex. These will include many refrigerator components, such as breaker strips, roller assemblies and control knobs; a relay switch, produced and assembled entirely by them; knobs and dials for the motor industry, and other similar productions. The range of their plastic sanitary ware will be exemplified by the Belvedere toilet seat, and the Ekco-Unimer polystyrene cistern float which is claimed to be completely non-corroding. (Stands C, 314 and 415.)

On their stand ✱**Colt Ventilation, Ltd.**, Surbiton, Surrey, will be exhibiting the complete range of their industrial ventilators. The exhibit will show how the ventilators operate, the way in which they are fitted, how a survey is carried out and details of some of the schemes already installed. A special feature of the stand will be a life-size factory roof in which different full-size Colt ventilators are fitted. Arrangements will be made on the stand to survey the premises of any interested inquirer, who will still be in time to place his order and have a ventilation scheme installed for the coming summer. (Stand B, 506.)

Conex-Terna, Ltd., Whitehall-road, Great Bridge, Tipton, Staffs, will be exhibiting a complete range of their " Conex " Fittings on their stand. The range includes " Conex " type " A " compression joints for semi-hard copper tube; " Conexcel " joints and Sofcop adaptors for fully annealed tube; stop, ball, globe and gate valves for use with copper tube; sewage bends and junctions, etc. An interesting feature of the exhibit will be a pressure testing apparatus, enabling visitors to the stand to see " Conex " compression joints subjected to abnormally high pressures. (Stand B, 623.)

Pneumatic dust control equipment, designed and manufactured by **Dallow Lambert & Co., Ltd.**, Spalding-street, Leicester, will be seen on their stand. Emphasis will be particularly laid on unit dust collectors, of which a complete range will be shown, including the new " Dustmaster " range. This is an entirely new type of unit dust collector, and different sizes are available with a variety of fan, filter and dust container combinations, which, it is said, enable the equipment to cover practically any known range of unit application. Multiple connection installation work will be portrayed photographically, and a 5 ft. 6 in. dia. cyclone will be on show. These multiple connection plants are provided with varying separating mediums, from the more conventional type of cyclone fitted as a speciality with counter balance multiple inlets, to " Drytube " fabric type filters, and " Multiswirl " series of wet collectors. (Stand D, 539.)

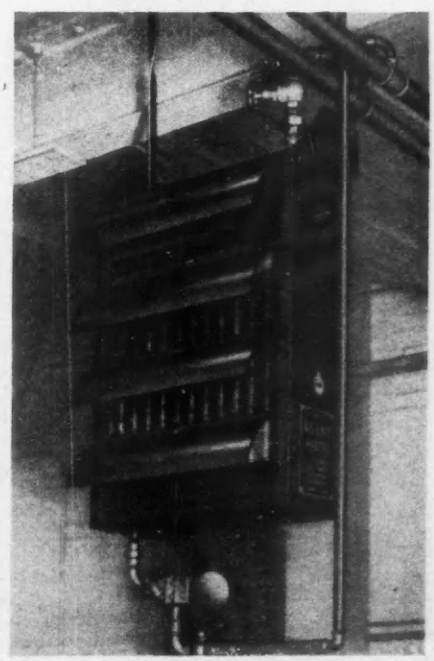
A working model of factory swing doors with rubber panels will be shown by **Dunlop Rubber Co., Ltd.**, Fort Dunlop, Erdington, Birmingham, 24, with a truck passing through them. When the truck is driven straight at them they do not bang against the walls but open easily, thus avoiding any damage. They are of the normal swing type with either one or two panels, swinging either one or both ways as required. The frame is of tubular steel in an inverted " L " shape, the two parts braced together by a triangular plate. The panelling is of canvas reinforced rubber sheeting with a standard thickness of five-sixteenths of an inch, and let into each panel is a rectangular observation window made from perspex, set at an angle. Black is the normal colour but a drab rubber covering is also supplied. The total weight is less than that of an ordinary wooden swing door. (Stand D,623 and 522.)

Shown on the stand of ✱**Easiclene Porcelain-Enamel (1938), Ltd.**, Darlaston, South Staffs, will be their silent absorption-type refrigerators for operation by electricity, town's or LP gas or kerosene (paraffin), their electric washing machine, the " Princess " sink units made in pressed steel, porcelain-enamelled with double and single drainer sink tops, and the " Duchess " stainless sink units with cream enamelled wooden cabinets. They will also be showing their low level flushing cisterns and washbasins. (Stand B, 522.)

E. Hill Aldam & Co., Ltd., Haslemere-avenue, London, SW18, will be exhibiting full-size working models of their " FoldAway 838 " and " Fold-Aside 123 " systems of folding partitions for interior purposes ; also full size working models of the " CornAway 333 " and " FoldAside 316 " systems of round the corner and folding doors for garages and industrial type premises. The " FlyAside Panther " system will be shown, both as a single straight sliding door and as a pair of bi-parting doors sympathetically controlled. The " FoldAside 307 " window gear will be shown in their office and a full-size working exhibit of the " FoldAway 517 " industrial folding-door gear will be on show. In addition to these full-size working models, they will have a full range of samples and literature describing all the exhibits and products. (Stand B, 316.)

Among the range of " Tornado " fans exhibited by **Keith Blackman, Ltd.**, Central House, 75, New-street, Birmingham, 2, will be steam unit heaters, designed to supply tempered air to public and industrial buildings. These have outputs ranging from 26,800 to 510,000 BTU per hour. The heating medium may be shut off if required, and the unit used for ordinary ventilating. Also on display will be electrofin unit heaters with similar functions, and capacities ranging from 10,200 to 128,000 BTU per hour. They are suitable for voltages up to 250 DC or 440 AC and have totally enclosed elements and adjustable louvres. (Stands D, 755 and 654.)

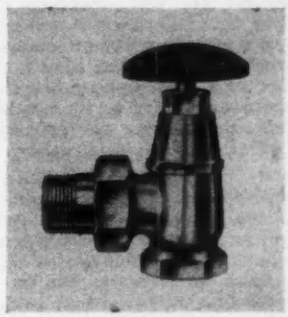
James H. Lamont & Co., Ltd., Norfolk House, Laurence Pountney-hill, EC4, will be exhibiting a comprehensive range of their " Securex " compression fittings for copper tubing suitable for hot and cold water and steam installations. There will also be a number of ship fittings and other items of general interest to the trade. Stand B, (630.)



Steam unit heater. (*Keith Blackman, Ltd.*)

A comprehensive selection of mouldings and other plastic products in a variety of materials will be displayed on the stand of **Lorival Plastics**, Little Lever, near Bolton, Lancs. These will include calendered PVC sheeting for lining chemical tanks and drums, and for electrical insulation. A range of plastic extrusions in various materials will be featured, among them being a selection of rods and sections used for decorative effects on such as floors and window frames. The display of injection moulded engineering products will include the " Polyfloat " cold water domestic cistern float made from Polythene and mouldings produced in other thermoplastic materials including Diakon and Polystyrene. Nylon filled plastics will figure among the wide range of compression mouldings on view, combining strength with resistance to water and electricity. (Stand C, 724.)

Manley & Regulus, Ltd., Showell-road, Wolverhampton, will be showing a comprehensive range of plumbers' and engineers' brasswork, " Speedy " and " Speedex " compression joint couplings, hot brass pressings and Regulus metal acid-resisting valves. Also on show, as in previous years, will be radiator valves and gate valves, but the range of these articles has been increased since the last BIF. They will also be offering a complete range of wastes and traps to BSS 1184, with outlets for lead, iron or copper. (Stand B, 314.)



Angle radiator valve. (*Peglers, Ltd.*)

The full range of Union locks and builders' hardware will be on show on the stand of **Josiah Parkes & Sons, Ltd.**, Willenhall, including a number of patterns which have been developed since the end of the war. They will also be displaying a wide variety of lock furniture in brass, bronze and aluminium. (Stand A, 526.)

✱**Peglers, Ltd.**, Marshalsea-road, London, SE1, will have a wide range of plumbers' and engineers' brassfoundry on display on their stand. Among the new items to be shown will be improved pattern radiator valves in forged brass and chromium-plated finish, " Prestex " joints for underground copper pipes, new pattern MOH screwdown fittings in chromium-plated finish, new light pattern boiler draw-off cocks, revised wash-boiler cocks and immersion heater plugs, and the new " Prestex " swivel nozzle sink units for direct fixing to mains supply; " H " and " C " supplies are kept separate until point of discharge by patented device. Overseas buyers will find valves and taps to suit overseas markets. (Stand B, 421.)

✱**Shires and Co. (London), Ltd.**, Guiseley, Yorks, will show a wide range of new or improved sanitary ware. The " Lynx " series of wc suites will be shown. Low level types will be contrasted with standard high-level models in black Duranite and an export suite in glazed white with an Oriental-type squat closet. Wash basins will be represented, and the " Reverso " cistern will be featured together with a " New Activus " unit suite in blue pottery. A group of light castings for the building industry, a selection of coloured and black plastic wc seats and a cistern cut away to show the interior will complete this display. (Stand B, 700.)

The **Skarsten Manufacturing Co., Ltd.**, 21, Hyde-way, Welwyn Garden City, Herts, will be showing their Skarsten scrapers, which are hand tools for removing dry paint, varnish enamel, lacquer and glue from wood, metal and glass surfaces and for dressing-down wood to a smooth finish. Accessories for these will include spare blades, file and a filing guide for resharpening. They will also be exhibiting a plaster crack scraper for opening out cracks on wall and ceiling before replastering; the "Awlscrew" combined screwdriver and bradawl; a repointing scraper for bricklayers which is an all-steel percussion tool for breaking up and scraping out old mortar before repointing brick walls; and a channelling tool for the mason, plumber and electrician for cutting channels in brick and concrete. (Stand B, 217.)

The Yale & Towne Manufacturing Co., Willenhall, Staffs, will be showing a full range of locks and builders' hardware, door closers and materials handling equipment. Included in the showing will be a panel illustrating a typical layout of a Grand Master-Keyed Suite. (Stands A, 329 and 228.)

Miscellaneous

New or improved batteries for all applications will be featured on the stand of **Chloride Batteries, Ltd.**, Swinton, Manchester. From electric vehicle traction to car starting, the design of Exide-Ironclad and Exide batteries has been modified by the development of porvic, the new microporous plastic separator material, and new corrosion resistant lead alloys. On show for the first time, Exide-Ironclad batteries of the latest type, incorporating porvic separators and plate grids cast from the new antimonial lead alloys, will form the main display. (Stand C, 301.)

Photographs and display examples on the stand of the **Copper Development Association** will convey an invitation to users of copper and copper alloys to make full use of all C.D.A. services, which are available free on request. The authoritative technical books published by the C.D.A. on applications of copper in many industries and on the properties of copper and its many useful alloys, will be prominently displayed. (Stand D, 232.)

Hale & Hale (Tipton), Ltd., Dudley Port, Tipton, Staffs., producers of castings in Blackheart malleable iron, will be able to offer to BIF visitors early delivery of most types of castings for the building and civil engineering industries. On view on their stand will be examples of manhole step-irons cast in accordance with British standard 1247/1945, and heavy-duty manhole covers and frames of a type used in roadwork schemes by a number of local authorities. This firm will also show a range of wedge and screw-type pit props, designed for use in mines, but adaptable for constructional work of any kind. Another product, which will be on show for the first time this year, is the new Barslide pitprop head. It is claimed to be capable of wide use on building projects. (Stand D, 609 and 508.)

G. A. Harvey & Co. (London), Ltd., will display a wide range of products manufactured at their works in Greenwich. This company have added considerably to their facilities for the fabrication of steel plate, and they are now able to manufacture pressure vessels, autoclaves, fractionating and absorption towers in steel plate up to 3 in. in thickness and of any diameter and length, to Lloyds class 1, rules, insurance companies and A.P.I.-A.S.M.E. codes. Work of this nature will be portrayed by the use of photographs on the stand. The display of cold rolled rings will be typical of the components Harvey's are able to produce for the fabrication of high-pressure vessels and steel platework. (Stand B, 329.)

The "easy squeeze Nu Mop," useful for cleaning purposes in homes, offices, shops and factories, etc., will be shown and demonstrated by **Modern Brushware, Ltd.**, Chesham, Bucks. (Stand B, 207.)

The "Seetru" mounting bolt, a newly-developed type of mounting bolt, is to be shown by **L. H. Newton & Co., Ltd.**, of Birmingham. It is said to be the first bolt of its type to use rubber as the gripping medium, thereby offering advantages over the usual "stiff" fastenings. The manufacturers state that the bolt has been used successfully, not only in concrete, but in masonry, building brick, wood, steel and similar materials. The bolt is made in two types, male and female. The female type is particularly suitable for fixing heavy equipment to floors, while the male type is best used for fixing equipment to walls. (Stand D, 533.)

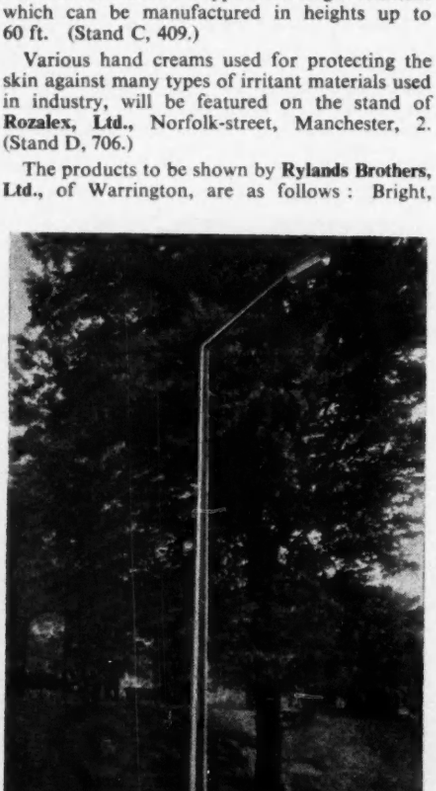
The Ozamaster and Duplex Ozaprinter, combined plan printing and developing machines, will be shown by the **Ozalid Co., Ltd.**, London Wall, E.C.2. The Duplex Ozaprinter gives high printing and developing speeds with automatic stacking of the finished dry prints. The whole range of Ozalid materials will be available for testing, including a new type of translucent printing material. Those interested in photo copying will be able to examine the range of Ozarapid machines designed for this purpose. (Stands D, 707 and 606.)

John Palmer, Ltd., Somers-road North, Portsmouth, will be showing their products at Castle Bromwich and Olympia, and a description of their exhibit appears in the London section. (Stand A, 610.)

Poles, Ltd., Erdington, Birmingham, will be exhibiting items from their range of new products, including "Adastra" 25-ft. class A columns for street lighting, approved by the Council of Industrial Design, together with class B columns both in hexagonal and circular sections. A number of poles for transmission lines of various types will also be shown, as well as a flagpole and a decorative lighting column, similar to those used at the Festival of Britain, and suitable for Coronation displays. An outside exhibit will show a typical floodlight structure which can be manufactured in heights up to 60 ft. (Stand C, 409.)

Various hand creams used for protecting the skin against many types of irritant materials used in industry, will be featured on the stand of **Rozalex, Ltd.**, Norfolk-street, Manchester, 2. (Stand D, 706.)

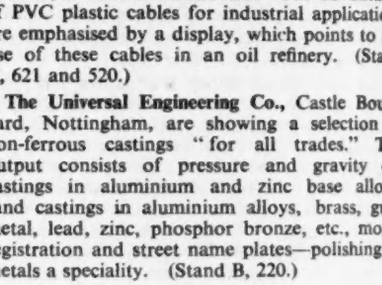
The products to be shown by **Rylands Brothers, Ltd.**, of Warrington, are as follows: Bright, annealed, coppered, galvanised, tinned, round and shaped wires; Brylanised "Rylock" woven fence; "Rylink" chain link fencing; "Rynet" sheep fence; netting, nails, staples; stitching and mattress wires. (Stand C, 329 and 228.)



The 25-ft. M.H. hexagonal column—"Optim" arm. (*Poles, Ltd.*)

Standard Telephones and Cables, Ltd., Connaught House, Aldwych, WC2, will be exhibiting an impulse frequency system of telemetering, power factor correction capacitors, and a selection of power cables. A display of rectifier equipment will consist of a demonstration of vehicle engine starting. The use of the "Startall" Major, suitable for heavy diesel and petrol engines employing 12 and 24 volt electrical systems, as an engine starter is demonstrated by cranking a large diesel engine even though the starter batteries are completely flat. It can be used for both slow and boost charging of vehicle batteries. The Standard "Startall," suitable for smaller engines having 6- and 12-volt electrical systems, is also demonstrated. The advantages of PVC plastic cables for industrial applications are emphasised by a display, which points to the use of these cables in an oil refinery. (Stand C, 621 and 520.)

The Universal Engineering Co., Castle Boulevard, Nottingham, are showing a selection of non-ferrous castings "for all trades." The output consists of pressure and gravity die castings in aluminium and zinc base alloys, sand castings in aluminium alloys, brass, gunmetal, lead, zinc, phosphor bronze, etc., motor registration and street name plates—polishing of metals a speciality. (Stand B, 220.)

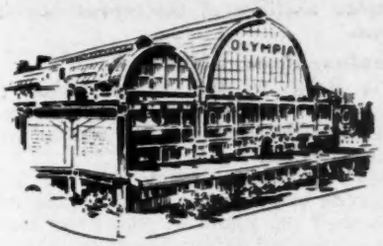


EARLS COURT

Occupying a prominent position in the Commonwealth section at Earl's Court, will be an extensive stand sponsored by the **Government of Northern Ireland.** The stand will present a comprehensive display illustrating the importance and wide range of Northern Ireland manufactures. The Ministry of Commerce has appointed Messrs. Leslie Gooday, ARIBA, MSIA, and C. Wycliffe Noble, ARIBA, DipArch, as designers of the stand. Their design embodies many original features. It allows maximum floor circulation and display space, pierced by the "legs" of six pinnacles symbolising the counties of Northern Ireland. Suspended between the pinnacles, above the level of the stand itself, will be a giant representation of the Northern Ireland Coat of Arms, linking the six counties and forming the crowning motif for this Coronation Year.

A display of "Maidsaver" kitchen cabinets in attractive colours and combination of colours, including side and top units, etc., will comprise the exhibit of **W. Lusty & Sons, Ltd.**, Empson-street, Bromley-by-Bow, London, E3. (Stand Z, 7, Earls Court.)

The exhibit of **Redwing, Ltd.**, 340, Benshamlane, Thornton Heath, Croydon, London, will consist of a complete practical kitchen which will include many new features. There will be a special corner sink unit incorporating a stainless steel bowl, laminated plastic surfaces, and aluminium doors and panels, and there will also be a built-in refrigerator, and a "dinette" alcove with table and chairs. Full details of the new and improved Redwing kitchen planning service will be available on the stand. (Stand Z, 12, Earls Court.)



OLYMPIA

On their stand, **Acrow (Engineers), Ltd.**, South Wharf, London, W2, will be exhibiting their steel partitioning and " Rolstore " mobile unit storage equipment. The aim of this latter system is to eliminate as far as possible the space that is taken up and wasted by gangways between rows of storage bins, thereby increasing the storage capacity of any given space. This is done by making a certain proportion of the bins mobile on tracks laid on the floor, in such a way that any bin in a back row can be quickly reached by rolling aside those in front of it. By this method, it is claimed, up to 50 per cent. space can be saved without loss of accessibility. (Stand A, 17, Olympia.)

The Dohm Group of Companies will be showing their composition flooring. " Dohmiculite " floors are a plastic mineral and Vermiculite composition, which combination it is claimed gives an ideal covering for hard wearing, resilient surfaces, fully insulated and colourful. It has been primarily designed for use in factories, hospitals and schools. Also displayed will be Dohm " Vermiculite," a light-weight thermal and acoustic insulant, and the display will show its uses throughout industry. (Stand D, 29, Olympia.)

G. A. Harvey & Co. (London), Ltd., will be showing a complete range of " Harvey " steel equipment, covering modern methods of filing and storekeeping. This equipment will include double pedestal and single pedestal steel desks and steel tables, steel plan cabinets, filing and card index cabinets, cupboards, clothes lockers, stationery cabinets, waste paper tubs, book and letter racks, letter trays, adjustable storage bins and shelving. Harveys have introduced several new features to their vertical filing cabinets and these will be seen for the first time. (Stand J, 31, Olympia.)

In addition to a range of " Victory " brand brushware, **John Palmer, Ltd.**, Somers-road North, Portsmouth, are arranging to demonstrate the " Victory " decoroller. They will also have on show the decorators' trade model decoroller which is designed for the application of paints and distempers. (Stand E, 4, Olympia.)

Saniguard Appliances, Ltd., 62, London Wall, EC2, will be exhibiting in the scientific instruments section the Barrywald automatic sanitary incinerator of which they are the sole distributors. (Stand B, 14, Olympia.)

Symbolising the rapidly developing strength of Britain's young petroleum-chemical industry, a replica of a spherical storage tank 25 ft. high will dominate the stand at Olympia of the **Shell Petroleum Co., Ltd.**, St. Helen's-court, Great St. Helens, London, EC3. This, however, will be only part of a display which is intended to demonstrate the growth and importance of petroleum chemicals in a variety of fields. The stand has been designed by Messrs. Ronald Dickens, MBE and Richard Hornby. (Stand D, 11, Olympia.)

Smiths English Clocks, Ltd., Waterloo-road, Cricklewood, London, NW2, and their associate companies will have a large stand in the National Hall, Olympia. Many hundreds of clocks and watches will be on show, including many new models. English Clock Systems, Ltd., the industrial division of the company, will feature a new time-switch for public signs and window lighting, capacity 20 amps., and a new twin circuit switch specially designed for poultry breeders. They will also be showing master clock systems and time recorders and a large range of wall clocks. (Stand L, 318, Olympia.)

IN PARLIAMENT

The Budget

ON April 14 MR. BUTLER, the Chancellor of the Exchequer, in introducing his Budget, said that last year he had to come to the conclusion, with much regret, that he must keep down the demands, mainly for home investment, on the metal-using industries, in order to free resources not only for increased defence production but also for an increased volume of exports in this class of goods. In the event there was a slight fall in fixed investment—that was to say, in new factories built and new plant and machinery installed. This was partly offset, as he forecast, by an increase in other building work, largely the result of the great energy and drive of the Minister of Housing and Local Government. Great advances were made in freeing manufacturers, traders, and consumers, from controls. They were able to return to private hands trading in a number of commodities—lead, zinc, timber, etc.

Referring to this year's prospects he said that steel, about which they were anxious a year ago, was now more plentiful, and the prospects were that except for a few types such as steel plate, there would be enough to meet all requirements, for home and export, in 1953. They also had the productive capacity. Latterly their productive capacity had been increasing steadily; with continuing investment it would go on increasing and was capable of giving us a much greater increase in output, in 1953, provided they took the right course now. They must look beyond the immediate export difficulties and whatever happened plan ahead to improve their competitive position. The time and opportunities they now had must be used to re-equip and modernise their factories, to expand capacity in lines which commanded a ready market abroad, and to develop new lines and new techniques. That meant more investment in productive industry and agriculture. They were making the licensing procedure easier and quicker for the building of new factories or extensions of factories. No manufacturer should now find difficulty or delay in getting a licence for productive work. The need was, however, so great and so urgent that he had come to the conclusion that further help must be given in this Budget.

He had in mind now the method first introduced in 1945 by a distinguished predecessor, who was then Sir John Anderson. He proposed to reinstate the system of initial allowances for capital expenditure on plant and machinery, on the construction of industrial buildings and on mining works. Those initial allowances would operate for profits tax as well as income tax. The rate for plant and machinery would be 20 per cent. in respect of capital expenditure incurred after April 14. Besides helping industry that would, of course, be available for agricultural machinery and would push forward the drive for more food production at home. Twenty per cent. was the rate originally granted in 1945 and it seemed to him adequate now. For capital expenditure on the construction of industrial buildings, the rate would be 10 per cent.; it never went beyond that. In view of the great importance to the national economy of extractive industries and especially of new mining development, and the unique character of some of the expenditure, he proposed that the rate of initial allowance for capital expenditure, both at home and overseas, on new mining works—a term that included such things as pit shafts and oil wells, but not plant and machinery—should be at 40 per cent. instead of the 10 per cent. that was formerly granted. Those proposals would cost the Exchequer nothing this year, but for 1954-55 the cost was estimated at £50m. and thereafter at £84m. in a full year. They should go a long way in assisting industry in the re-equipment, modernisation and expansion that was necessary, and would produce an increased demand for investment this year.

Houses For Sale

On April 14 MR. DAVID JONES asked the Minister of Housing and Local Government if he would circularise all local authorities who were housing authorities, with a view to obtaining information as to the number of authorities who had offered their houses for sale; the total number of houses so offered; and the number of applications they had received.

MR. MACMILLAN said he hardly thought it worth while to send a circular to 1,470 local authorities at this stage. Inquiries had been made informally of about 250 housing authorities of all types, and these showed that nearly 60 per cent. had decided to offer houses for sale, 20 per cent. were unwilling, and the rest were still undecided. Few houses had been sold yet, but several hundreds of tenants had asked to be allowed to buy, and he understood that many more were considering purchase.

Controlled Price of Houses

On April 14 BRIGADIER MEDLICOTT asked the Minister of Housing and Local Government how soon he anticipated being able

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MANCHESTER: DEANSGATE 5971

to make a statement of Government policy regarding the lifting, modifying or reimposing of the restrictions on the price and rent of houses constructed under building licences, bearing in mind that the present restrictions were due to expire on December 19, 1953.

MR. MACMILLAN said he hoped to make a statement on this matter before the end of the session.

Rent Restriction

On April 14 BRIGADIER MEDLICOTT asked the Minister of Housing and Local Government how soon he anticipated being able to make a statement of Government policy in relation to the amendment of the Rent Restriction Acts.

MR. MACMILLAN said as soon as might be, having regard to the complicated and difficult problems involved.

Flat Building In Scotland

On April 14 MR. PATRICK MAITLAND asked the Secretary of State for Scotland whether he would take steps to ensure that all local authorities confined their housing schemes to houses of not less than three storeys, to minimise the encroachment on agricultural land.

MR. STUART said he would not. He took every opportunity of urging local authorities to minimise the use of agricultural land for housing purposes, but obviously varying local needs and circumstances could not be ignored in determining the type and density of houses to be built.

MR. MAITLAND said that in Lanarkshire alone since the war more than 5,000 acres of agricultural land had been lost to local authority housing as well as another 2,400 acres to the new town of East Kilbride. Was the Minister aware that flats as such were not unwelcome to those looking for fresh accommodation?

MR. STUART said he wanted to do everything possible to safeguard good agricultural land; building plans were closely scrutinised to avoid unnecessary encroachment upon it, and under the Act of 1947 planning authorities were obliged to consult with agricultural executive committees. He was afraid that the hon. Member's suggestion was too rigid and therefore not practicable.

Cement Dust

On April 14 MR. DODDS asked the Minister of Housing and Local Government, if, in view of the public feeling over a large area in Kent consequent upon the heavy covering of cement and other forms of dust, he would arrange for, or co-operate in, a public inquiry in an effort not only to find a solution to the problem but also to show to the public concerned that everything possible was being done to deal with a situation that had caused much damage and distress; and if he would make use of his powers under Sections 23, 76 and 100 of the Town and Country Planning Act, 1947, to deal with a situation that was causing distress and cost to many people.

MR. MACMILLAN said he was aware that the nuisance from cement dust in this area had been aggravated in recent months by the failure of five of the dust precipitators at the works. Two had now been repaired; a third would be ready in April and a fourth in June. His Inspectors had the matter in hand and energetic steps were being taken to reduce emissions to the practicable minimum. The Alkali, etc., Works Registration Act, 1906, provided effective statutory powers and he did not think that action under the Town and Country Planning Act, 1947, or a public inquiry, would assist.

Timber Houses

On April 14 MR. MANUEL asked the Secretary of State for Scotland how many timber houses were allocated to local authorities during 1952; and how many of these houses were completed by December 31, 1952.

MR. STUART said that of the 3,000 houses authorised in April, 1952, 16 had been completed by the end of the year.

School Buildings in Scotland

On April 14 MR. HAMILTON asked the Secretary of State for Scotland what was the total value of school building begun and completed since October 31, 1951: and what were the comparable figures in the period from March, 1950, to October, 1951.

MR. STUART said that the information so far as available was given in the following table:—

Period	*Building begun*	*Building completed*
	£	£
Six quarters—April, 1950 to September, 1951	8,956,000	3,609,000
Five quarters—October, 1951 to December, 1952	5,042,000	3,712,000

Softwood Timber

On April 20 MR. HURD asked the Minister of Materials if he had made an estimate of the increase of consumption of softwood timber that would follow the abolition of the licensing system; and what was his estimate of the probable saving of substitute materials, such as steel, aluminium, fibreboard and cement.

SIR ARTHUR SALTER said he understood that various estimates had in the past been made, by both the Government and the timber trade, of the possible increase in softwood consumption and of the reduction in the use of other materials which might result from the abolition of the softwood licensing system. He had discussed this matter with representatives of the Timber Development Association, in consultation with whom his officials were now working on a fresh assessment in the light of to-day's conditions and timber prices.

Replying further, he said that there was no shortage of hardwood, but we had to import something like 95 per cent. of the softwood used in this country and we could not afford the extra expenditure in foreign exchange which would be the result of the complete abolition of the present licensing system.

Roundway House, Devizes

On April 16 MR. HOLLIS asked the Minister of Education whether she would make a statement on the future of Roundway House, Devizes.

MISS HORSBRUGH said that the local education authority for Wiltshire had fully considered the future of Roundway House and had reached the conclusion that it should be sold. She had informed the authority that she was prepared to consider favourably this proposal.

MR. HOLLIS asked what sum of public money had been spent in the purchase and subsequent upkeep of Roundway House.

MISS HORSBRUGH said that the cost of purchase was £7,500. The gross cost of upkeep (including cost of necessary repairs) for the four years ending March 31, 1952, totalled £10,134, but the cost to public funds was reduced by letting.

INQUIRY BUREAU

Connecting to a Sewer

Q.—I have purchased a plot of land just outside this town and am having a house constructed. Before purchasing and having the plans made, I checked with the necessary authorities regarding services. The engineer to the council concerned told me that a public sewer ran along the frontage to my plot and that I could connect there. My plans were presented and passed showing drains connected to this sewer.

A few weeks later other persons made inquiries to the engineer and it was found that a mistake had been made and that this sewer had not been installed and was not likely to be proceeded with. I was then told that it would be necessary to connect to a sewer which ran along the far side of some houses on the opposite side of the road (the ground falls from my site to this point). This would necessitate obtaining wayleave through one of the gardens, and I am having difficulty obtaining this permission.

Is there any reason why I cannot instal a septic tank on my own land? The house is 100 ft. from the road, and due to the falls it would have to be between the house and road. I understand that the Public Health Act does not require a connection to be made to a public sewer if it means crossing land not under the same ownership. T. B.

A.—At present, by the provisions of Section 37 of the Public Health Act 1936, the local authority cannot require a connection to be made to the public sewer because the proposed house is more than 100 ft. away from the existing sewer and because it would mean crossing another person's land. They can, of course, bring a public sewer to within 100 ft. of the house or agree to bear that proportion of the expenses of connection which relates to the excess over 100 ft., and in that case they can force the owner to connect, provided always that, if the intervening land is not in the possession of the developer, they can arrange for permission for the connection to pass over this land.

There is no reason why the owner should not instal a septic tank. The definition of cesspool in Section 90 of the Public Health Act 1936 includes a settlement tank or other tank for the reception or disposal of foul matter from buildings. Under Section 37 (3) a proposed drain is satisfactory if "it discharges into a cesspool." The local authority will probably require the septic tank to be some distance from the house. R. P. C.

OVERSEAS BUILDING

[From Our Own Correspondents]

Colombia.—A large number of foreign concerns are setting up their own plants in the Republic of Colombia in South America. The US firm, Cluett, Peabody and Co., is setting up a shirt factory, a perfume factory is to be built, and a Swedish firm is to build a factory for the manufacture of razor blades. A report, not yet confirmed, states that a Belgian firm manufacturing prefabricated houses is setting up a plant in Colombia shortly. Government departments also have extensive building projects on hand for this year and next. The budget of the National Institute of Municipal Development includes provision for more than £2m. to be spent on electric plant, waterworks, hospitals and drainage schemes. The head of the Institute has also been reported as saying that there are plans ahead for the installation during the next two years of 20 new generating plants which will supply power to about 150 municipalities. The National Institute for Irrigation and Electrical Development has allotted more than £1¼m. on similar projects, including hydro-electric schemes, and the Ministry of Hygiene is to spend nearly £2m. for work on the construction and repair of hospitals.

The Energia Electrica of Medellin is seeking a new loan of $2m. from the Export/Import Bank for the third 25,000 kw stage of the Rio Grande hydro-electric scheme. A company is to be created, known as the Cia Electrificadora de Bolivar S.A., with a capital of approximately £1m., to undertake extensive schemes for the electrification of the Department of Bolivar.

The National University has announced plans to construct a modern Faculty of Medicine with accommodation for 2,500 students. The actual building contract has been placed with a Colombian firm.

In Cartagena, a committee of cattlemen are considering a project for the building of a meat refrigeration plant to go with the abbatoir now being erected there.

The large sum of £10m. is to be spent this year on road construction and improvements.

French Morocco.—A new four-year plan begins in French Morocco this year and will bear chiefly upon port extensions at Casablanca, social welfare and housing. A large permanent cold store is to be built at Casablanca, too, this year. Hotels are also becoming very popular. In 1949 there were 164 hotels. In 1952 there were 218. At the present time there are plans for the building of more hotels, comprising in all some 500 bedrooms. A number of power-stations are under construction and should be completed round about 1956. While French Morocco seems to be in a fortunate position for cement and other building materials there are still shortages in accessories and decorations.

India.—Further news from India deals with the proposed building of a modern oil refinery at Visakapatnam in 1955. This refinery, when built, will have the capacity to refine 500,000 long-tons of crude oil a year. The site for the refinery has already been selected and the business will be owned and operated by an Indian firm on behalf of American backers. Houses are to be provided for the workers, but so far no figure has been stated. There is a growing belief that a small township will grow up round the refinery, as is usual when refineries are built in the country. Three other refineries are scheduled for construction in the vicinity. The foundation will also be laid for a chemical industry utilising the by-products of the refineries, and this will necessitate the erection of factories.

Pakistan.—A start is being made on the Ganges-Kobadak irrigation scheme in Pakistan which was prepared by FAO in co-operation with the Pakistani Government. The full project, when completed, will cost £60m. and will irrigate 2m. acres in the Khulna area.

Preparatory work has also commenced on the Nari-Bolan flood control scheme which is expected to generate 1,800 kw of electric power.

Progress is also reported in the aerial survey which is being undertaken by Hunting Aero Surveys (Canada), Ltd., over 165,000 square miles of Pakistan at a cost of $2m. Of the total area photographed, 42,000 square miles is for land improvement purposes, including the planning of large irrigation and hydro-electric schemes. This will eventually lead to vast building projects in Pakistan which will help to transform the entire countryside.

Southern Rhodesia.—A move has been made to start a Youth Hostels Association in Southern Rhodesia, and if sufficient enthusiasm and funds are forthcoming it is planned to build hostels throughout the country. Two camp sites have been offered. One at Inyanga and the other on a farm 25 miles from Salisbury on the Umtali Road.

The African Life Assurance Society is to build a large block of offices in Bulawayo. Two large cinemas are also to be built there. Both are in the planning stage at present.

**USA.*—Mr. J. J. Coulas, Viking Supply, 8944, South Hamilton, Chicago 20, Illinois, is interested in receiving quotations for plumbing fixtures, particularly brass valves of from ⅜ in. to 2 in., both gate valves and globe valves. These would be required for varying pressures, particularly 100, 125 and 150 lb. water pressure, though they would appreciate receiving information regarding other available items of a roughly similar nature. They would also be interested to receive quotations for cast iron, malleable and galvanised fittings. UK manufacturers who are interested in this inquiry should communicate direct by air mail with the United States firm at the address given, submitting quotations on an f.o.b. and c.i.f. basis in dollars and giving delivery dates. All inquiries by telephone should be made to Trafalgar 8855, ext. 2506.

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LMBA

Tendering Without Quantities: Modification of London Rule

AT a special general meeting of the LMBA last week it was decided to modify the National Quantities Rule, so far as London is concerned, by permitting tendering without provision of bills of quantities for the construction of single dwelling houses having a maximum floor area (living space) of not more than 1,500 feet super.

The LMBA Quantities Rule now reads as follows:—

> Members shall not tender in competition for contracts exceeding £3,000 in total value without bills of quantities being supplied. In the case of contracts for the repetitive construction of small dwelling houses the Bills of Quantities shall be prepared in accordance with the principles of the code for the Measurement of Building Work in Small Dwelling Houses. This instruction shall not apply to contracts for repairs or contracts for painting or decorating only, and shall not apply to the construction of single dwelling houses having a maximum floor area (living space) of not more than 1,500 feet super.

Presentation of Medals

THE BISHOP OF LONDON, the Right Reverend Dr. J. W. C. Wand, DD, is to present the LMBA Medals for 1953. As his predecessor did last year, the Lord Mayor, Alderman Sir Rupert de la Bère, is to preside. The presentation will take place in Goldsmiths' Hall, Foster-lane, EC2, on the afternoon of Wednesday, October 28.

Last year the Duke of Edinburgh presented the medals at a function in the Mansion House, attended by the Minister of Education and the Minister of Works.

Australian Guest of Honour

MR. S. D. C. KENNEDY, of Sydney, New South Wales, hon. treasurer of the Master Builders' Federation of Australia, past president of the Master Builders' Association of New South Wales, and one of the founder members of the Master Builders' Association of Canberra, was the guest of honour of the council of the LMBA at a luncheon before its April meeting. The president, Mr. Gerald Hill, presided.

At the council meeting Mr. Kennedy, after expressing his happiness at being able to visit the headquarters of the builders of London, the capital of the Empire, presented, on behalf of the builders of Canberra, the capital city of Australia, a leather-bound volume of photographs of Canberra to the president for the LMBA library.

* From the Board of Trade Special Register Information Service.

FBI AND THE BUDGET

Need for More Exports Emphasised

SPEAKING of the Budget at the annual general meeting of the Federation of British Industries on April 15, the retiring president, SIR ARCHIBALD FORBES, referred to the outstanding need for more exports.

"I need hardly repeat to members of this Federation," he said, "the problems and difficulties with which exporters are faced at the present time. There is too the unknown factor of the effect on world trade of any readjustment in the level of business activity in the USA. None the less the Chancellor has in this Budget sought to ease the difficulties of the UK exporter in precisely the manner which we have represented, and that is by reducing in some measure the general disincentive created by crushing taxation. I would therefore hope that British industry will respond to this by maintaining the great effort already made and in every direction seeking to increase this by another determined assault on these markets, backed by the fullest ingenuity and aggressive salesmanship."

The export problem, he continued, must be regarded from a long-term standpoint. In this connection one of the most important factors which was also closely associated with the balance of payments problem was the development of the resources of the Commonwealth and the Colonial Empire. At a time when there was a shortage of savings for capital investment at home we had to face the unpalatable fact that no more than a part of the funds required for this purpose could for some time at least be forthcoming from this country which had hitherto been the traditional source of capital for the Commonwealth. A most welcome lead had been given from this country in the setting up of the Commonwealth Development Finance Company. It was the hope that this company would not only be able to provide at least a token of the finance required, but would engender the confidence needed to attract capital from outside into the Commonwealth, and particularly from the USA.

"The development of the resources of the Commonwealth ought to lead to the availability of more products for sale to the dollar area and to the provision of export business for the UK," Sir Archibald Forbes continued. "But it must be realised that many problems will have to be solved in the way of creating the conditions which would attract that capital. In many areas the first requisite is the provision of such essential services as transport, communications and housing—objectives not so appropriate for private investment in these days. In some areas there may be doubt about security under existing conditions."

Continuing, he said that if the American private investor was to be attracted into the Commonwealth he must be reasonably satisfied about freedom of transfer of funds, the absence of a danger of expropriation and a net yield after tax comparable with what he could obtain in his own country and commensurate with the risks involved.

On the Federation's work in the past year, Sir Archibald Forbes said that they had been associated with the setting up of the British Productivity Council which intended to follow up the preliminary work done by the Anglo-American Council on Productivity and exert every effort to increase the volume and lower the cost of production in this country. The Council was a joint organisation representing the principal industrial bodies, the TUC and the nationalised industries. "It seems to us that it has a most constructive rôle to play in strengthening the economy of the country and we will continue to give it every support," he declared.

The New President

Sir Harry Pilkington, chairman of Pilkington Brothers, Ltd., glass manufacturers, and last year's deputy president of the FBI, was elected president of the Federation at the annual meeting in succession to Sir Archibald Forbes, who retired after holding the office for two years.

NEWS IN BRIEF

Non-Ferrous Metals Appointment

The Ministry of Materials has announced that Mr. R. F. Rucker has been appointed Director of Non-Ferrous Metals from May 1 next in succession to Mr. C. A. James, who has resigned.

LCC Development Plan Inquiry

Objections relating to Fulham and Hammersmith will begin to be heard at 10.30 a.m., April 27, at the inquiry into objections to the development plan for the County of London.

Dinner to M. Freyssinet

To mark a conferment of the honorary degree of Doctor of Science on the eminent French engineer, Monsieur Eugène Freyssinet, by the University of Leeds on May 14, a special dinner has been arranged by the Prestressed Concrete Development Group in the University Refectory the same evening. Those interested in attending should communicate with the Secretary of the Prestressed Concrete Development Group, Cement and Concrete Association, 52, Grosvenor-gardens, London, SW1.

Henham Hall Demolition

T. W. Gaze and Son offered for sale by auction at Henham Hall, Suffolk, on Wednesday, the fabric of the mansion of that name after the sale and removal of the fixtures and fittings. The hall is the family seat of Lord Stradbroke, Lord Lieutenant of Suffolk. The catalogue stated it contains 100,000 ft. of timber, about 35 tons of lead work, and a million bricks "very easy to remove and clean."

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The SCOTTISH BUILDER

School Building Exhibition

AN exhibition, "Britain Builds for Education," was opened at the Scottish Building Centre, Glasgow, on Wednesday, by Mr. J. Henderson Stewart, MP, Parliamentary Under-Secretary of State for Scotland. This exhibition, which is primarily one of school buildings and is not intended to deal with educational methods or policies, was arranged by the Building Centre, London, and has recently been shown there.

It sets out to illustrate something of what has been done in England and Wales by way of building for education since the war.

NEW BUILDINGS

Dumfries-shire.—CC has three schemes of alterations and additions to schools totalling £45,000, including an annexe to The Academy, Langholm, at £10,000, additions at an est. cost of £21,000 to The Academy at Moffat, and a £14,000 addition to Moeston Academy. Their architect is George Bartholomew, ARIBA, ARIAS, County-chbrs., Dumfries.

Dumfries-shire.—Plans in hand by The Northern Wholesale Dairies, Ltd., The Creamery, Locherby, for cheese-making factory, at Park-place, for which the architects are T. Martin & Son (F), 41, Bank-st., Dumfries.

Edinburgh.—Plans have been prepared for scheme of restoration to The Moray House Training College at St. Davids-st., The Cannongate. The est. cost is £41,000. Architects are Gordon & Day (F), 30, Heriot-row, Edinburgh.

Edinburgh.—Plans in the hands of their own architects for an £18,000 extension at Bath-la., Leith, by British Ropes, Ltd., Leith.

Elgin.—Corporation has approved plans for 70 houses, their architect being G. N. Blane, Municipal-bldgs., Elgin.

Lanarkshire.—Plans to be prepared for alterations for Royal Bank of Scotland at Ranloch-st., Larkhall, for which the architects are F. T. and W. R. Dykes, Cadzow-bldgs., The Cross, Hamilton.

Lanarkshire.—Plans to be prepared for extension, est. to cost £130,000, to factory at the Newhouse Industrial estate. The architects are Wylie, Shanks & Wylie (F&A), 120, Blythswood-st., Glasgow, and the quantity surveyors are James Barr & Son, FF.RICS, 213, St. Vincent-st., Glasgow.

Macduff.—TC have accepted plans for the erection of 12 brick houses at a cost of £20,831 to replace those damaged by storm at the harbour.

Perth.—Plans prepared for £53,000 scheme of alterations and additions at the Gas Offices, for which the architects are John S. Dow & Co., 5, Charlotte-st., Perth.

Firm's Commemoration

The company of J. Gerrard and Sons, Ltd., Manchester, recently entertained all those employees who had been with the firm 25 years or more. Numerous gifts were presented, including watches, tea and coffee sets, silver salver, diamond and amethyst pendant, etc., and a commemorative book was printed for the occasion. It contains a brief survey of the firm's development since it was founded in 1864, and is illustrated with photographs.

Anniversary Gala

The 25th anniversary of their association with the "600" Group is to be celebrated by K and L Steelfounders and Engineers, Ltd., Letchworth. The occasion will be marked by a Gala Day held at Letchworth on Saturday, May 2. The Queen's Troop of the Royal Horse Artillery will give its "Musical Drive"; there will be three circus shows in a Big Top; and a special display of fireworks in the evening. Some 5,000 employees and friends are expected to be present. Watches and other awards will be presented to 87 employees on May 1 to commemorate their 25 years of service.

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

APRIL 25.

***Northallerton UDC.**—Eight aged persons' bungalows at Priory-close. S to the Council, 72, High-st. North. Dep. £2 2s.

APRIL 27.

***Hemel Hempstead RDC.**—Conveniences, King's Langley. E&S. Dep. £2 2s.

APRIL 30.

***†Bristol CC.**—20 houses at Coldpark-gdns., Withywood. City A. Dep. £2 2s.

***Crawley Dev. Corpn.**—Ten shops with maisonettes over, one single-storey shop and 10 garages at Three Bridges Neighbourhood Centre; 19 shops with maisonettes over, one single-storey shop and 19 garages at Langley Green Neighbourhood Centre. Chief A, Broadfield, Crawley.

†Glendale RDC.—11 houses at Main-st., Lowick and 10 houses at Bowsden. S, Boardroom, Wooler. Dep. £2 2s. Tenders by May 28.

***†West Sussex CC.**—Fire station at Upper Shoreham-rd., Shoreham-by-Sea, job no. 3529. City. A, Chichester.

MAY 2.

***†Essex CC.**—Two primary schools, Ockendon. County A, Chelmsford.

Haverfordwest RDC.—Six houses and site works at Penycwm (Brawdy) and eight houses with site works at Rosemarket. S, 8, Picton-pl. Dep. £2 2s.

***†West Ham BC.**—Extensions to "West Ham Lodge," Avenue-rd., Harold Wood. Boro' A., 70, West Ham-la., Stratford, E15. Dep. £2 2s.

MAY 4.

***†Haverhill UDC.**—68 dwellings on Parkway housing estate, comprising (a) 39 at Beech-gr./Western-ave.; (b) 29 at Chestnut-cl./Eastern-ave. J. Myers, LRIBA, Station-rd., Haverhill. Dep. £2 2s. Tenders by May 16.

***†Hendon BC.**—Conversion of 160 and 162, Station-rd. BE&S. Dep. £2 2s.

***†Portsmouth City C.**—Extensions to St. Vincent Lodge, Southsea. City A. Dep. £3 3s.

MAY 5.

***†Bristol CC.**—Erection of 3-storey shop in Broadmead, and alteration of shop premises at Broadmead end of Lower Arcade. City A. Dep. £2 2s.

Ebbw Vale UDC.—Two pairs of shops and flats and two houses at Waenorest housing site, Beaufort. J. Thomas, LRIBA, Council Offices. Dep. £3 3s.

***†Ipswich CB.**—Extensions to Westbourne school, Marlow-rd. Johns & Slater, FA.RIBA, architects, 32, Foundation-st. Dep. £2 2s. Tenders by May 29.

***†Ipswich CB.**—Erection of Castle Hill infants' school, Dryden-rd. Johns & Slater (F/A), architects, 32, Foundation-st. Dep. £2 2s. Tenders by May 29.

***†Portsmouth City C.**—66 flats and 72 maisonettes, Lake-rd. R. A. Thomas (F.), Buckingham House, High-st. Dep. £3 3s.

***Thurrock UDC.**—Stores and demolition and re-erection of certain buildings, Hathaway-rd. depot, Grays. Dep. £1 1s.

MAY 8.

Settle RDC.—26 houses at Hellifield. E&S, Town Hall. Dep. £2 2s.

MAY 9.

Consett UDC.—45 houses on Ebchester housing estate. J. Ettringham, architect, Derwent-st., Blackhill. Dep. £3 3s.

Oakham (Rutland) RDC.—Erection of (a) 12 houses, and (b) a block of six garages at Empingham-rd. site, Exton. H. W. Kelham, architect, 31, Broad-st., Stamford, Lincs. Dep. £1 1s.

MAY 11.

Hoole UDC.—20 flats at Hoole House estate. Council's A, R. Boot, 22, Newgate-st., Chester. Dep. £2 2s.

MAY 12.

Berkhamsted UDC.—12 old people's bungalows and 15 garages at Durrants estate. E&S. Dep. £2 2s.

Poole TC.—24 dwellings on sites at junction of Mossley and Astbury avenues, Wallisdown (contract W. 14). E&S. Dep. £2 2s.

MAY 15.

***Dover BC.**—42 blocks at Aycliffe. BE. Dep. £2 2s.

MAY 16.

Kingsclere and Whitchurch RDC.—66 dwellings and external services at site No. 87. F. Henshaw & A. C. Cheek, architects, 26a, High-st., Andover, Hants. Dep. £2 2s.

MAY 18.

***Stepney BC.**—Reinstatement of Whitechapel public library. BE&S.

MAY 20.

***Worcester City C.**—Six shops and 6 maisonettes on Newtown No. 2 estate. City E&S. Dep. £3 3s.

MAY 21.

***Weymouth and Melcombe Regis BC.**—24 flats and 14 old people's bungalows on Downclose estate, Weymouth. E&S, 6, Pulteney-bldgs., Weymouth. Dep. £2 2s.

MAY 26.

***Brighton BC.**—Erection on Woodingdean estate of 63 houses, section 5; 69 houses, section 6; 54 houses, section 7. Erection on Hollingbury estate of 29 houses, site 4; 60 flats, site 5. BE&S. Dep. £2 2s. each section.

***Chertsey UDC.**—Public library and convenience at Kingthorpe-gardens., Addlestone, and public convenience at Beomond-garden. E&S. Dep. £1 1s.

Fareham UDC.—Six houses at Wallisdean-ave. E&S, Westbury Manor. Dep. £2 2s.

***Newry UDC.**—36 dwellings at Armagh-rd. estate. TC. Dep. £3 3s.

JUNE 1.

***Hastings BC.**—Secondary modern school for 360 boys, The Grove, St. Leonards-on-Sea. BE, 37, Wellington-sq. Dep. £5 5s.

JUNE 2.

Ellesmere RDC.—20 houses in Baschurch. A. Williams, architect, Kenneth-chbrs., Dogpole, Shrewsbury.

NO DATE.

***North-East Metropolitan Regional Hospital Board.**—Adaptation 43 and 45, Skelmersdale-rd., Clacton. Secretary, 11a, Portland-pl., London, W1.

***Watford RDC.**—90 dwellings, Cecil Lodge, Abbots Langley. Dawe, Carter & Ptnrs., architects, 33, Clarendon-rd. Dep. £1 1s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

APRIL 30.

***†Birmingham City C.**—External redecoration of (a) Highbury Hall, (b) Witton Hall, Brookvale-rd., (c) Summer Hill Homes, Summer Hill-ter. City E&S. Dep. £2 2s. each contract.

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MAY 4.

***†Durham CC.**—Heating installations at Newton Aycliffe and Peterlee Junior Mixed New County Schools. Improvements to heating at Shildon St. John's and Shildon All Saints CE (Controlled) Schools. County A, Court-la., Durham.

MAY 5.

Chippenham BC.—External painting of 680 bungalows at Corsham and Chippenham. BS, 10, Market-pl. Dep. £2 2s.

***†Northants CC.**—Installation work at five schools. County A, Northampton.

MAY 6.

***Chester-le-Street RDC.**—BS. (Materials.)

MAY 8.

***Widnes BC.**—Fencing and gates to 150 dwellings on Crow Wood estate. Boro' A, Brendon House, Widnes-rd. Dep. £1 1s.

MAY 15.

Bedlingtonshire UDC.—E&S. (Materials.)

***Staffs CC.**—Cleaning and painting of Rolebridge, Tamworth, and adjacent flood span. T. Evans, Clerk to County Council. Dep. £1 1s.

JULY 1.

***Deptford BC.**—(a) Internal redecorations to council houses; (b) external redecorations to council houses, (c) redecoration of council establishments. BE&S.

ROADS, SEWERAGE AND WATER WORKS

MAY 13.

***Walthamstow BC.**—Demolition and site-clearance works, Clinker Asphalt Plant, Low Hall Farm. Boro' A, E&S.

MAY 15.

***Henley-on-Thames BC.**—Site works on council's housing site on former Abraham's allotments. E. G. Ives, LRIBA, 3, Cork-st., Reading. Dep. £2 2s.

MAY 22.

Harrogate Corpn.—Construction of a covered concrete service reservoir, 5,000,000 gals. capacity. G. H. Hill & Sons (Manchester), civil engineers, 51, Mosley-st., Manchester, 2. Dep. £5 5s.

NO DATE.

†Gold Coast Government.—Roads and bridges in West Africa during next few years. Contracts will range from £50,000 to £360,000. Consulting engineers, Rendel, Palmer & Trition, 125, Victoria-st., SW1.

GENERAL BUILDING WORK (LONDON)

Battersea.—SCHOOL.—Construction of handicraft centre at Tennyson secondary school, estimated cost £5,410, has been sanctioned by LCC.

Greenwich.—FLATS.—BC are recommended to acquire No. 26, Kidbrooke-gr. for the erection of 18 flats.

Greenwich.—DEVELOPMENT.—BC are recommended by Hsg. Com. to approve scheme prepared by Richardson & Houfe, FF.RIBA, 31, Old Burlington-st., W1, for the erection of 101 dwellings on Pond-rd. housing site.

Greenwich.—CHILDREN'S HOME.—LCC are recommended to approve the erection on site of 79-89 (odd), Eastcombe-ave., of a house for seven children, estimated cost £6,125. Plans prepared by LCC architect's department.

Hackney.—DEVELOPMENT.—Scheme has been prepared by LCC architect's department for the development of Bentham-rd. site by 310 maisonettes, 39 flats and 30 houses, estimated cost £964,000.

Hendon.—EXTENSIONS.—J. Laing & Son, Ltd., propose to extend their headquarters at 33, Burns-la. BC have given their approval subject to certain conditions.

Hendon.—FLATS.—Plans and elevations for erection of 36 flats at site No. 11, Kirkworth-rd., Edgware, have been prepared by BE.

Hendon.—HOUSES.—Erection of four houses at junction Parson-st./Downage, NW4, proposed by Bertie, Crewe & Kay, architects, 1, Green-la., NW4, has been approved by council.

Hendon.—HOUSES.—Plans have been prepared by Roger Malcolm, Ltd., 3, Broadfields-ave., Edgware, for erection of 128 houses on site No. 8, Spur-rd., Edgware, for BC.

Islington.—DEVELOPMENT.—BC are recommended to acquire sites 65-73 (odd), Cornwallis-rd.; 1-7 (odd), Bavaria-rd. and 2-6 (even), Ellenborough-rd., est. cost £3,345, as an extension to Sussex-close scheme. These allow for erection of 16 dwellings; and the appointment of E. C. P. Monson, FA.RIBA, 120, Moorgate-st., EC2, as architects, and O. E. Parratt, FRICS, Adelaide House, London Bridge, EC4, as quantity surveyor, is also recommended.

Lewisham.—SCHOOL.—LCC have approved preliminary plans for special agreement secondary school for 450 girls on site in the grounds of Belmont Convent, estimated cost £122,360. They were prepared by Clayton, Black and Ptnrs., architects, 16, Grenville-st., WC1.

St. Pancras.—SCHOOL.—LCC have sanctioned expenditure of £31,944 on extension to Parliament Hill secondary school. Scheme prepared by LCC architects' department.

Stepney.—DEVELOPMENT.—LCC Hsg. Comm. have approved a scheme for the development of Locksley-st. site by 260 flats, 104 maisonettes and 32 houses. The maisonettes will have 24 shops on the ground

floors. Estimated cost of the scheme, prepared by LCC architect's department, is £1,069,550.

Stoke Newington.—FLATS.—BC are to erect 48 flats on Burma Mews/Green-la. housing site and are recommended to appoint E. C. Harris & Partners, 3, Bedford-sq., WC1, as quantity surveyors.

Stoke Newington.—FLATS.—BC are recommended to approve erection of 22 flats on site of 10-18 (even), Victorian-gr. housing scheme, est. cost £47,517.

Stoke Newington.—FLATS.—BC recommended to approve revised scheme for erection of 50 flats on site of 57-69 (odd), Shakespeare-walk and 76-84 (even), Spenser-gr., est. cost £106,573. Also appointment of E. C. Harris & Pinns., 3, Bedford-sq., WC1, as quantity surveyors for the scheme.

Stoke Newington.—APPOINTMENT.—Renewal of the appointment of Howes & Jackman, 1, Verulam-bldgs., Gray's Inn, WC1, as consultant architects to BC is recommended by Hsg. Com.

Wandsworth.—SCHOOL.—Scheme for the erection in 1953-54 educational building programme of a county primary school with 280 places for juniors and infants at Putney Vale, estimated cost £63,280, has been approved by LCC Ed. Com. Plans were prepared by LCC architects' department.

Wandsworth.—OLD PEOPLE'S HOME.—The acquisition of No. 2, West-dr. as a home for 28 old people at a cost of £9,900 is proposed by LCC Welfare Comm. Estimated cost of the repairs and adaptation is £7,310.

Westminster.—FLATS.—Sketch designs submitted by Riches and Blythin, FA.RIBA, 16, Northumberland-ave., WC2, for the erection of 56 flats on Ebury Bridge estate extension is recommended for LCC's approval in principle.

Woolwich.—DEVELOPMENT.—Scheme for the erection of 105 houses, 10 flats and 60 flats on Blithdale-rd. site, estimated cost £460,000, has been prepared by LCC architect's department.

(PROVINCIAL)

Bredbury and Romiley.—UDC seek permission for erection of public hall, £30,000 est. cost.

Brierley Hill.—Richard Thomas & Baldwins, Ltd., propose erection of apprentices' training sch. at Rockmoor Works, £35,000 est. cost. Architects, Webb & Gray, Dudley.

Burnley.—EC received approval for repairs and improvements at Lane Head prim. sch., £10,034 est. cost.

Cheshire.—EC propose following projects in 1954/5 schools programme:—Crewe cty. gram., Lymn cty. sec. mod.; revised first instalment of Sale/Altrincham College of Further Educ.; first instalment of Mid Cheshire (Hartford) College of Further Educ.; and Grappenhall residential spec. sch. for subnormal children.

Colne.—TC propose erection of 44 houses and 12 flats at Laneshaw Bridge.

Consett.—UDC's housing programme includes estate of 350 houses between Gloucester-rd. and Briardale, Delves-la.—BC to erect further 55 houses at Moorside.—Tenders to be obtained for 46 houses at Ebchester and for shops on the Richard Murray and Cutlers' Hall estates. Council's A. J. J. Eltringham, Derwent-st., Blackhill, Co. Durham.

Coventry.—TC approved scheme for wholesale fruit and vegetable market at Barras Heath, £181,500 est. cost.—Received approval for revised plans of maternity and child welfare and school health centre at Humphrey Wanley-cres., Tile Hill neighbourhood unit.

Coventry.—CC recommended to request ME's approval to £1,708,000 schools 1954-55 building programme. It includes:—Ullathorne RC sec. gram., £150,000; Woodlands comp. sec., £118,000; Foxfords comp. sec., £208,000; Coundon Court comp. sec., £208,000; Chance prim., £45,000; Tile Hill RC prim., £43,000; New Open-Air sch., Corley, £70,000; Central College of Art and Technology, £200,000; City of Coventry Training College, £250,000.

Darlington.—MT promised to give further consideration to TC's plans for bus stn. at Feethams. BE, G. S. Short.

Darlington.—EC intends including in next year's school programme, erection of Arthur Pease cty. prim. sch. and Haughton sec. mod./tech. sch.—Loan sanction sought for £31,941 for erection of 22 houses at Firth Moor.—L. C. Abdale & Son, builders, Darlington, to erect 16 houses in Loraine-cres.

Doncaster.—Borough EC has submitted plans to MoE for the following schools:—Cantley estate: county secondary school (£134,600); prim. and jnr. sch. (£49,280). Intake: inf. sch. (£37,200); technical high sch. for boys (£144,432).

Dudley.—EC seek approval for final plans of proposed sec. tech. high sch.

Durham.—RDC approved estimates of £93,062 for building 82 houses at Bearpark. Plans by S.

Durham.—CC Ed. Com. had plans prepared by County A, G. K. Clayton, Court-la., Durham, for a school at South Stanley.

Durham.—CC to build public library at Jarrow at cost £7,000. Architect, G. K. Clayton, Court-la., Durham.

Eston.—UDC approved a provisional programme prepared by S. N. C. Harrison, for erection this year of 116 houses at Redcar-rd. estate, and 24 on Crossbeck estate.—It is proposed later to erect 176 houses on Third Section of Redcar-rd. East estate.

Glusburn.—West Riding CC propose sec. mod. sch. in 1954/5 programme.

Golborne.—UDC approved plans for 32 houses and 10 bungalows on Hampson estate.

Golborne.—UDC propose civic hall at Lowton.

"THE BUILDER" PRICES

BRASS TUBES

In consequence of the fall in the market price of zinc, the basis price of brass tubes was reduced from midnight on April 20 by ¼d. per lb. to 25d. per lb.

The Brass and Copper Tube Association has announced that in consequence of the fall in the market price of zinc, basis prices have been reduced from midnight, April 15, as follows:

	Reduced by per lb.	*Basis price per lb.*
Brazed brass tubes ...	¼d.	36½d.
Drawn brass strip sections	¼d.	35½d.

LEAD PAINTS

Associated Lead Manufacturers, Ltd., have announced the following revised basis prices per ton which came into effect as from 8 a.m., April 21:—

	£	s.	d.
Genuine English dry white lead ...	127	0	0
Genuine ground English white lead ...	149	5	0
Genuine English white lead paint (per gal.)	2	16	0
Genuine refined English red lead ...	110	5	0
Genuine powdered English litharge ...	110	5	0
Genuine English flake and ground flake litharge	112	15	0
Genuine refined English orange lead ...	122	5	0
Genuine refined English red lead in oil ...	138	0	0
Genuine English red lead Pt. BS.1011 Type 1 (1 gal. tins)	2	13	6
English red lead Pt. BS.1011 Type 2 (1 gal. tins)	2	3	0

LEAD SHEET AND PIPES

Associated Lead Manufacturers, Ltd., have also announced the following revised basis prices for sheet lead and lead pipe effective as from 8 a.m., April 17:

Delivered England and Wales (*except to undermentioned areas):

	£	s.	
Sheet lead	119	15	per ton
Lead pipe	121	0	per ton
Ten-eighty-five lead pipe...	10	0	per ton extra

* Delivered to Devon, Cornwall, Isle of Man, Isle of Wight and Channel Islands, £1 10s. per ton extra.

Halesowen.—TC received approval for layout of further 30 houses at Howley Grange estate.

Jarrow.—NCB propose to double the coke works at Monkton.

Lancs.—CC announced work on construction of £1,500,000 suspension bridge over Mersey between Runcorn and Widnes will start in autumn.

Leicester.—TC to approve second phase of extension of Eastfield Hall of Residence, £18,926 est. cost.

Manchester.—TC propose new civic centre, comprising community centre, library, public baths, civic centre, health centre, offices, two cinemas, two churches, two public-houses, two petrol stations, police station, fire station, theatre, flats, café, residential hotel and main shopping centre. City A. L. C. Howitt.

Mansfield.—BC approved revised layout for 460 dwellings and six shops at Brickkiln-la. estate.—To prepare plans for 10 shops at Ladybrook estate.

Middlesbrough.—E. T. Sweeting & Son, Ltd., builders, Back Haymore-st., to erect 122 houses in vicinity of Heythrop-dr.

Middlesbrough.—BE, J. A. Kenyon, preparing amended sketch plans for shops on Berwick Hills estate.—MH approved TC's £13,000 scheme for maternity and child welfare centre on Thornaree estate.

Middlesbrough.—Docks and Inland Waterways' Executive to carry out £470,000 docks improvement scheme.

Morpeth.—TC referred to Hsg. Com. plans by S. F. K. Perkins, for 25 houses to be erected in Spelwitla.

Newcastle.—R. Bowey & Son, builders, Back Raby-st., Byker, to build 42 houses at Silver Lonnen. Architects, Dryden & Shaw, Market-st.

Newcastle.—Warehouse and loading platform to be built for J. Reed, Ltd., Leighton-st. and Thompson-st. Architect, J. Moffitt, Cheviot-view, Ponteland, near Newcastle.

Newcastle-on-Tyne.—City C received loan sanctions £168,431 for erection of instalment of Rutherford College of Technology.

Northants.—EC approved plans for new schs. at Corby and Duston, and extensions to existing schs. at Wellingborough; 1954/5 schools building programme and reserved list in order of priority:—Guilsborough and Roade sec. mod. sch., Corby sec. mod. sch., Daventry sec. mod., Northampton gram. (additional accommodation), Brackley Magdalen College sch., and Rushden Tennyson-rd. cty. mod. (hall and gymnasium), and Kettering gram. (completion of new buildings).

North Riding.—EC seeks approval to build county grammar school at Thirsk for 600 pupils and a school at Northallerton for 280 scholars. Plans by County A, Northallerton.

Northumberland.—CC recommended to carry out schemes to include Marden railway bridge, £100,000; Weetwood Bridge, £16,000; Seaton Delaval railway bridge, £25,000; Warkworth bridge, £75,000; West Woodburn bridge, £28,600; Whiteadder bridge, £56,000; and Doddington bridge, £28,000. Cty. S. A. Cheyne, County Hall, Newcastle-on-Tyne.

Oldham.—RC authorities propose erection of sch. at Chamber-rd. and Grange-ave.

Scarborough.—TC received loan sanction for £124,874 for the erection of 96 houses at Eastfield.

Sheffield.—Plans approved by Hsg. Com. for 110 "Radburn" type houses, as part of the first 440 houses on the new Greenhill estate.

Smethwick.—TC propose erection of 64 maisonettes at Stanhope-rd.

Southport.—TC approved plans for synagogue at junction Lawton-st. and Walton-st.

Standish with Langtree.—UDC propose 104 houses and 24 flats at Lark Hill site.

Sunderland.—Corpn. propose to convert tram sheds in Hylton-rd. into bus depot. Est. cost, £32,680. BE, J. E. Lewis.

Wallsend.—TC to build 60 houses on the Low Willington Farm estate at cost £63,500. Plans by BS. G. Teasdale.

Warrington.—EC included first instalment of new Technical College in Long-la. in 1953/4 programme.

Warwickshire.—Ed. Com. propose £1,500,000 1954-55 schools building programme; to include prim. schs. at Keresley; Kingshurst Hall estate; Coleshill; and south-west of Rugby. Also girls' sec. sch. and an inf. sch at Solihull; extensions to three Sutton Coldfield sec. sch.; and a new Leamington North Precinct sec. sch.; Shipston-on-Stour sec. sch.; Southam sec. sch. Proposed sec. schs. at Coleshill, Solihull and Hartshill, est. to cost £140,000 each.

Washington (Co. Durham).—UDC's plan for bus stn. being submitted to the Cty. Plan. Officer.

Washington (Co. Durham).—UDC seeking loan sanction for £55,123 for erection of 45 houses in Oxford-ave.; £126,066 for 94 houses at Heugh Hill.

West Lancs.—RDC to negotiate contract for erection of 84 houses and 20 flats at Shevington site.

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TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Barrow-in-Furness.—119 houses at Tummerhill estate extension, for BC, and 14 aged persons' dwellings and communal hall at Newbarns estate: *Direct Labour, £175,999 and £19,604.

Birkenhead.—52 houses at Prenton Dell estate, for BC: *Bell Investments, Ltd., Russell-rd., Birkenhead, £73,400.

Birmingham.—Erection of single-storey factory at Birmingham Factory Centre, for Rex Arnold & Co., Ltd.: *Slough Estates, Ltd., Slough.

Blackburn.—Houses for TC at Shadsworth estate: *Middleton & Co., Ltd., Blackpool, £121,968 (88); *Gregory Construction (North Western), Ltd., £44,745 (36 flats).

Bolton.—Six lock-up shops, eight flats, 14 maisonettes and six garages at Captains-la. site, for BC: *W. W. Kenny (Maghull), Ltd., 92, Liverpool-rd. North, Maghull, £40,203; 158 Unity type houses at Oldhams estate: *Richard Costain & Sons, Ltd., Liverpool; two bungalows at Eastfield estate: *A. D. Primrose, 556, Hallliwell-rd., Bolton.

Brandon.—Erection of 54 houses at Esh Winning, for UDC: *Direct Labour, £80,340.

Carlton.—84 houses, Burton-rd., Gedling, for UDC E&S: *Progressive Builders, Ltd., 3, Lowater-st., Carlton Hill, Nottingham, £105,499.

Crosby.—Erection of St. Bede's RC sec. sch., for RC authorities: *John Williams (Liverpool), Ltd., Liverpool, £115,850.

Doncaster.—Erection of Hawthorn inf. sch., for EC: *Direct Labour, £35,500.

Dudley.—Layout of Simms-la. sch. site, for E.C.: K. E. Millard & Co., Ltd., New Wolverhampton-rd., Langley.

Dumbartonshire.—Plans prepared for scheme at the Alexandria Old Folks' Home: *Blackburn (Dumbarton), Ltd., Builders, Dumbarton, £7,748.

Edinburgh.—New offices, etc., for George Gibson & Co., Ltd., at Commercial-st., Leith. J. & F. Johnstone (F), architects, Charlotte-st., Leith, Edinburgh: *Robert Smith & Co. (Builders), Ltd., Leith.

Eston.—22 aged persons' bungalows on the Redcar-rd. East estate, South Bank, for UDC. N. C. Harrison, AMICE, MIMunE, E&S, Normanby-rd., South Bank, Middlesbrough:—

Wilson (Engineers, Newcastle), Ltd., Newcastle-on-Tyne	£31,700
G. H. Rogers, Middlesbrough	29,823
Hudson Bros. (Middlesbrough), Ltd., Middlesbrough	28,529
R. E. Cryer, Ltd., Marske-by-the-Sea ...	27,619
W. J. Emmerson, Middlesbrough	27,399
Shannon (Contractors), Ltd., Middlesbrough	27,130
*Sykes Bros., 31, Forth-rd., Redcar	26,156

Glasgow.—Alterations at Renfrew-st., for Domestic Science Dept. John MacNab (F), architect, 129, Bath-st., Glasgow. General contractor: *Andrew MacLennan, Ltd., £13,737. Electrical fittings and installation and allied works: *Glasgow Corporation Direct Labour Electricity Dept., £1,150.

Glasgow.—New prim. sch. at Walleide-rd., Balarnock, for Corporation. John MacNab (F), architect, 129, Bath-st., Glasgow: *L. K. MacKenzie & Partners, Ltd., Glasgow, £25,522.

Glasgow.—Plans prepared for additions at the College of Domestic Science, Park-drive. James Monro & Son (A), architects, 307, West George-st., Glasgow: *J. Grant (Builders), Ltd., Glasgow.

Grantham.—24 houses, Harrowby, for BC. T. J. Livesey, AMICE, AMIMunE, AMIStructE, BE&S. Quantities by K. H. Bole, FRICS: *W. Foster & Sons, 41, Castlegate, Grantham.

Leeds.—Adaptation of "Leafield," King-la., as a maternity and child welfare centre, for TC: *J. Tomlinson & Sons, £6,223.

Lindsey.—School, Thrunscoe, Cleethorpes. A. Ronald Clark, ARIBA, AMTPI, Cty. A., Lincoln: *F. A. Wound, Ltd., Ladysmith-rd., Grimsby, £32,234.

Liverpool.—Erection of Booker-ave. cty. inf. sch., for E.C.: *H. Brookfield & Son, Ltd., 23, Mayfield-rd., Liverpool 19.

LCC.—Foundations and site works for the county complements to Burlington school and St. Clement Danes' grammar school (Hammersmith North):—

Thomas & Edge, Ltd., Woolwich	£51,798
C. F. Kearley, Ltd., Chiswick	49,889
E. H. Smith (Croydon), Ltd., Croydon ...	45,426
Allen Fairhead & Sons, Ltd., Enfield ...	43,368
C. P. Roberts & Co., Ltd., Holborn ...	43,170
W. H. Gaze & Sons, Ltd., Kingston-upon-Thames	42,500
Kirk & Kirk, Ltd., Putney	40,900
Galbraith Bros., Ltd., City of London ...	40,710
Richard Costain, Ltd., Westminster	40,702
J. Garrett & Son, Ltd., Balham	40,586
Wm. Lacey (Hounslow), Ltd., Hounslow ...	38,243
*M. J. Gleeson (Contractors), Ltd., North Cheam	†37,155

† After arithmetical correction.

The architect's comparable estimate is £41,887.

Erection of the new county primary school at Tufnell Park (Islington North):—

F. B. Hipperson & Son, Ltd., Dagenham ...	£80,957
A. Roberts & Co., Ltd., Westminster ...	80,001
J. M. Hill & Sons, Ltd., Wembley	79,825
Bernard Sunley & Sons, Ltd., Westminster	79,431
A. T. Rowley (London), Ltd., Tottenham ...	78,712
The Demolition & Construction Co., Ltd., Westminster	76,954
Patman & Fotheringham, Ltd., Islington ...	75,811
H. Fairweather & Co., Ltd., Muswell Hill	73,772
*R. J. Rowley, Ltd., Tottenham	72,868

The architect's comparable estimate is £78,560.

Construction of the foundations of the new buildings at Parliament Hill county secondary school (St. Pancras North) and erecting a schoolkeeper's house:—

Willmett Bros., Ltd., Twickenham ...	£37,767
Wilson Lovatt & Sons, Ltd., Westminster ...	30,496
E. H. Smith (Croydon), Ltd., Croydon ...	30,382
C. P. Roberts & Co., Ltd., Holborn	29,963
F. B. Hipperson & Son, Ltd., Dagenham ...	29,586
Stewart & Partners, Ltd., St. Marylebone ...	29,466
Rush & Tompkins, Ltd., Sidcup	29,045
Gee Walker & Slater, Ltd., Westminster ...	27,039
*J. Garrett & Son, Ltd., Wandsworth	26,368

The architect's comparable estimate is £26,000.

LCC.—Tenders have been accepted as follows for work at the undermentioned schools, etc.:—

Painting and Cleaning.

Morpeth (Bethnal Green), Robinson Bros. (Colliers Row), £2,275; Mowlem (Bethnal Green), E. Kilburn, £4,272; Olga (Bethnal Green), J. & J. Dean, Ltd., £4,265; Brunswick Park (Camberwell, Peckham), John Kent (London), Ltd., £4,582; Credon (Camberwell, Peckham), T. Rider & Son, Ltd., £5,134; Gloucester (Camberwell, Peckham), Greenaway & Son, Ltd., £7,082; Hollydale (Camberwell, Peckham), R. J. Holland, Ltd., £2,533; Childeric (Deptford), F. Allen & Sons, Ltd., £2,786; Tidemill (Deptford), G. M. Tompkins, £3,349.

Queensmill (Special), Queen's Manor and Bishop's Park (Fulham West), Geo. Jones & Son (Contractors), Ltd., £5,299; Brookmill (Greenwich), Anthony Cooper & Son, Ltd., £3,145; Creek Manor (Greenwich), F. Allen & Sons, Ltd., £4,749; Fossdene (Greenwich), A. W. Gunstead, Ltd., £4,642; Greenwich Park (Greenwich), A. Cooper & Son, Ltd., £2,689; Canonbury (Islington East), Charles Berger & Son, Ltd., £8,055; Tudor (Islington South-West), Dearing & Co., Ltd., £5,100; Fox (Kensington South), Geo. Jones & Son (Contractors), Ltd., £3,369; Kennington (Lambeth, Brixton) Greenaway & Son, Ltd., £4,261; Santley (Lambeth, Brixton), Charles Berger & Son, Ltd., £6,665.

Sudbourne (Lambeth, Brixton), The Bunting Construction Co., Ltd., £4,125; Paxton (Lambeth, Norwood), Painting and Maintenance Contractors, Ltd., £2,920; Strand (Lambeth, Norwood), F. Troy & Co., Ltd., £7,876; West Norwood (Lambeth, Norwood), B. Elsey, Ltd., £3,477; Vauxhall Park (Lambeth, Vauxhall), A. Cameron, Ltd., £2,237; Vauxhall (Lambeth, Vauxhall), Pugett Construction Co., Ltd., £7,276; Ennersdale (Lewisham North), Collins (Contractors), Ltd., £4,040; Brownhill and Catford (Lewisham South), Wm. Malpress & Co., Ltd., £1,387; Dalmain (Lewisham West), R. J. Holland, Ltd., £2,880; Rathfern (Lewisham West), Sydney Antill & Co., £2,059.

Campbell (Paddington North), C. & T. Painters, Ltd., £3,629; Devons (Poplar), J. Murphy & Sons, Ltd., £3,950; Hay Currie (Poplar), E. R. Blackborrow, Ltd., £4,342; Gateforth (St. Marylebone), E. J. Lacy & Co., Ltd., £3,399; Acland (St. Pancras North), M. & F. Frawley, Ltd., £4,833; Brecknock (St. Pancras North), E. J. Lacy & Co., Ltd., £5,915; Burghley (St. Pancras North), Sheppard & Short, Ltd., £10,998; Compton (Shoreditch and Finsbury), Peace & Co. (Builders), Ltd., £3,330; Penton (Shoreditch and Finsbury), Thurman & White, Ltd., £3,934.

Randal Cremer (Shoreditch and Finsbury), O. H. Groves & Co., Ltd., £3,857; Thomas Fairchild (Shoreditch and Finsbury), Gray, Conoley & Co., Ltd., £6,485; Winton (Shoreditch and Finsbury), Walker Symondson, Ltd., £4,817; Victory (Southwark), G. Potton & Sons, Ltd., £3,970; Martin Frobisher (Stepney), W. Martin (Finsbury), Ltd., £6,273; Clissold (Stoke Newington and Hackney North), R. J. Truscott, Ltd., £3,263; Millfields and Pond House (Stoke Newington and Hackney North), S. C. Grover, Ltd., £8,863; Broadwater and Defoe (Wandsworth Central), King's (B.D.J.), Ltd., £5,903; West Hill (Wandsworth, Putney), Froom (Wimbledon), Ltd., £3,676; Battersea Grammar (Wandsworth, Streatham), Clarke, Barton & Co., Ltd., £6,674.

Granton (Wandsworth, Streatham), Triggs & Co., Ltd., £3,268; Burrage (Woolwich East), Messrs. T. H. Mildwater & Sons, £2,734; Church Manorway and Manorway (Woolwich East), Messrs. Bex & Wright, £1,008; Earl Rise (Woolwich East), T. W. Driver, Ltd., £3,545; Timbercroft (Woolwich East), McAllister (Builders), Ltd., £3,938; Wyborne (Woolwich West), J. E. Webb & Co., Ltd., £3,537.

Electrical Installations.

Bonner (Bethnal Green), Alexander Hawkins & Sons, Ltd., £2,499; Dulwich Hamlet (Camberwell, Dulwich), Powerlite Electrical Installations, Ltd., £3,002; Cobourg (Camberwell, Peckham), Cann & Stewart, Ltd., £3,932; John Stainer (Deptford), London Electricity Board, £1,923; Meridian (Greenwich), L.S.P. Electrical Co., £3,668; Forster (Islington East), C. J. Ferguson & Sons, Ltd., £3,237; Rotherfield (Islington East), C. J. Ferguson & Sons, Ltd., £2,701; Gordonbrock (Lewisham North), Holliday & Son (Electrical), Ltd., £3,664; Ballamore (Lewisham South), Thorpe & Thorpe, Ltd., £3,323; Moreland (Shoreditch and Finsbury), W. M. Grant & Co., £3,679; Swaffield (Wandsworth Central), D.C. Engineering Co., Ltd., £3,961; Telferscot (Wandsworth, Clapham), Electrical Contracting Co., £3,299; Hotham (Wandsworth, Putney), Thorpe & Thorpe, Ltd., £3,794; West Hill (Wandsworth, Putney), Thorpe & Thorpe, Ltd., £3,920; Bannockburn (Woolwich East), London Electricity Board, £1,994.

Sanitary Improvements.

William Blake (Battersea North), Hudson Bros. (Builders), Ltd., £3,297; Wix (Battersea South), R. Bilham & Sons, £1,882; Queen's Manor (Fulham West), A. H. Franklin & Sons, Ltd., £1,584; Burghley (St. Pancras North), Livermore & Co., £2,056; Ellerslie (Hammersmith North), E. J. Lacy & Co., Ltd., £3,090; Kingsgate (Hampstead), W. Richards & Sons (Hendon), Ltd., £2,400; Brockley (Lewisham North), E. J. Holland, Ltd., £2,846; Dalmain (Lewisham West), Norman Wright (Builders), Ltd., £1,970; Princess May (Stoke Newington and Hackney North), W. Loweth & Sons, Ltd., £2,503; William Patten (Stoke Newington and Hackney North), Peace & Co. (Builders), Ltd., £1,731; Larkhall (Wandsworth, Clapham), Hudson Bros. (Builders), Ltd., £1,495; Rosa Bassett (Wandsworth, Streatham), R. Patten, Ltd., £1,380.

Fire Damage Repairs.

Balham (Wandsworth, Clapham), J. A. Tyler & Sons, Ltd., £12,625.

Provision of Hutted Classrooms.

Elmfield (Wandsworth Central), H. T. Oliver & Sons, Ltd., £7,609.

¶London (Air Ministry).—New contracts to the value of £500 or over for week ended April 18, 1953.

Building work: Lewis & Watters, Ltd., Leamington Spa, Warwickshire. *Installation of cranes, etc.*: Geo. W. King, Ltd., Hitchin, Herts. *Painting work*: G. and J. Sedden, Ltd., Stoke-on-Trent; M. A. Appleton (Contractors), Ltd., Wolverhampton. *Heating services*: Jeffreys & Co., Ltd., London, SE1; Ashwell & Nesbit, Ltd., Leicester. *Wiring services*: N. G. Bailey & Co., Ltd., Leeds. 4. *Fencing erection*: Durafencing (Northern), Ltd., Manchester 3. *Concrete road construction and general maintenance work*: A. Ross & Co., Westgate-on-Sea. *General maintenance work*: W. & J. Simons, Ltd., Lincoln; Fred. Pickering (Builders), Ltd., Wednesfield, Staffs.

London (British Railways).—Eastern Region of British Railways announce that the undermentioned contract has now been placed: Renewal of permanent way, King's Cross district, Tersons, Ltd., 4, Dollis Park, Finchley, London, N3.

London (British Railways).—New contracts placed by London Midland Region:—

Repairs to the engine shed roof at Walton-on-the-Hill motive power depot: Mears Bros. (Contractors), Ltd., Dock-rd. South, Bromborough Port. Thermal insulation and waterproofing to reinforced concrete barrel vault roofs and canopies of the new stores buildings at Derby locomotive works: Macartney, Ltd., Birkett House, 27, Albemarle-st., London, W.1. Glazing repairs to the roof over the concourse at Liverpool Lime-st. station: Industrial Engineering, Ltd., Mellier House, Albemarle-st., London, W.1. Supply and erection of steelwork for the new machine shop and stores at Leicester motive power depot: Redpath Brown & Co., Ltd., structural engineers, Trafford Park, Manchester 17. Supply on hire of scaffolding for the renewal of the roof coverings at Southport Chapel-st.: Mills Scaffold Co., Ltd., Highfield-rd., Levenshulme, Manchester 19. Labour only for the cleaning and painting of Manchester Central passenger station buildings: Clarke & Son (Wigan), Ltd., 28a, Mesnes-rd., Wigan. Maintenance and small construction contract for steelwork erection, alterations and repairs to bridges and structures in the Southern area of the London Midland Region for 1953 and 1954: Samuel Butler & Co., Ltd., Albion Works, Stanningley, nr. Leeds. Additional openings in the Kent Viaduct, bridge No. 15, on the Carnforth and Whitehaven line: Leonard Fairclough, Ltd., Chapel-st., Adlington, Lancs.

London (Metropolitan Police).—The following contracts have been let for the Metropolitan Police: New bathroom and decorations at the married quarters, Hendon Police-stn., J. W. Cooper & Sons, £740; hobbies room and retaining wall at Havelock House estate, SE23, Rose & Hansley, Ltd., £1,683; laying out gardens at Ebury-st., SW1, Gilliam & Co., Ltd., £974; internal repairs and decorations at Lambeth Stores, A. J. White & Co., £3,082; internal repairs and decorations at Philip Game Section House, SW3, Decra, Ltd., £2,800; canteen and kitchen improvements at Marylebone-la. Police-stn., R. Mansell, Ltd., £2,243.

¶London (War Dept.).—Contracts placed by W.D. during week ended April 11:—

Yorkshire: Miscellaneous, Harold Firth & Son, Ltd., Huddersfield. *Shropshire*: Painting, Geo. Jones & Son, Liverpool 6; road repairs, Bituminous Surfacing, Ltd., Manchester 2. *Warwickshire*: Miscellaneous, W. Corbett & Sons, Knowle. *Brecknockshire*: Miscellaneous, B. Jenkins & Son, Brecon. *Morayshire*: Miscellaneous, The Scottish Tarmacadam and Asphalt Co., Ltd., Glasgow, C.5. *Kent*:

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Mere and Tisbury.—Four houses and four bungalows at Fonthill Bishop, for RDC. Bothams & Brown, LRIBA, 32, Chipper-la., Salisbury. Quantities by J. S. Nevill, FIAS, Wimborne, Dorset: Wort & Way, Salisbury, £14,309; *R. Butcher & Son, Warminster, £11,301.

Middlesbrough.—Erection of 28 houses on the Park End housing estate, for T.C.: *G. Wade, Ltd., Redcar, £38,269.

Morecambe and Heysham.—18 houses and 20 flats at Banks-cres., for TC: *Wm. Gardner & Co., Ltd., Back Byron-rd., Morecambe, £45,607; 12 flats off Smithy-la.: *A. Robinson & Sons, Ltd., West End-rd., Morecambe, £20,570.

Newton Aycliffe.—Erection of cty. jun. sch., for Durham CC. Cty. A., G. R. Clayton, Court-la., Durham: *G. Stephenson (Builders & Contractors), Ltd., Chester-st., Bishop Auckland, £75,908.

Northumberland.—Provision of central cooking depot at Seaton Burn, for CC. Cty. A., C. C. Brown, County Hall, Newcastle-on-Tyne: *A. Carr, 71, Stoddart-st., Newcastle-on-Tyne, £25,000.

Northumberland.—Conversion of Gallowhill Hall into a special sch., for CC. Cty. A., C. C. Brown, County Hall, Newcastle-on-Tyne: *Haverys (Contractors), 38, The Side, Newcastle-on-Tyne.

Portsmouth.—Rebuilding No. 52 High-st., Old Portsmouth, for Mr. H. S. I. Walsworth: *Sadler & Co., building and civil engineering contractors, Sally Port House, Old Portsmouth, £1,750.

Poulton-with-Fearnhead.—Adaptations and extensions at Padgate CE sch.: *Frank Warburton & Son, Stockton Heath, £24,922.

Renfrewshire.—Plans prepared for £150,000 extension, new building, etc., at Renfrew Airport. Rowand Anderson, Kininmonth & Paul (FF), architects, 16, Rutland-sq., Edinburgh. Blyth & Blyth, consultant engineers, 135, George-st., Edinburgh: *A. A. Stuart & Sons (Glasgow), Ltd., Glasgow.

Sheffield.—Erection of 56 flats and maisonettes at Hemper-la. estate: *Reeves Charlesworth, Ltd., 27, Wilkinson-st., Sheffield, £68,593.

Smethwick.—Nine houses on three sites, for TC: *D. Charles, Ltd., 220, Cooksey-rd., Birmingham, £13,330.

Southport.—Eight shops with eight maisonettes over at Heathfield-rd. site, for BC: *Fred Buck & Sons, Ltd., Sussex-rd., Southport, £36,188.

Stanley (Co. Durham).—Erection of 100 "Orlit" houses at South Stanley, for UDC: *Tarslag, Ltd., Bowesfield-la., Stockton-on-Tees, £157,222.

Stoke-on-Trent.—Adaptation of Bulkley, Woore and Moorhill, Leek, as accommodation for aged: *Direct Labour.

Sunderland.—Erection of canteen at Bonnersfield, for G. F. Marshall & Sons: *D. & J. Ranken, Ltd., Stockton-rd., Sunderland.

Swadlincote.—54 houses, Hartshorne estate, for UDC. E&S, Bank House, Midland-rd.: *F. Perks & Son, Ltd., Long Eaton, Nottingham (subject to MOH&LG approval).

Tenterden.—Six pairs of s.d. bungalows at the Shrubcote housing estate, Appledore-rd., for BC. H. G. Hunt, Dip Arch, ARIBA, The Ingles, Hawkhurst, Kent:—

W. A. Bush, Highgate, Hawkhurst ...	£16,889
W. P. Woodgate, Ltd., High Halden ...	15,787
Graham Watts, Ltd., Biddenden ...	15,274
Trenas, Ltd., Tenterden	15,250
Llewellyns (Hastings), Ltd., St. Leonards-on-Sea	15,040
*William Ellis (Etchingham), Ltd., Etchingham	14,575

Wallsend.—Erection of 48 bungalows and four houses: *J. H. James, Archer-st., Wallsend, £43,986 and £5,294.

Wallsend.—14 houses in Denbigh-ave., for TC: *J. H. James, Archer-st., Wallsend. 46 houses at Low Willington farm estate, for TC: *J. Armstrong, Wallsend.

Washington.—45 houses in Oxford-ave., for UDC: *J. & T. Robson & Co., Springwell, £56,123.

West Bromwich.—54 houses at Yew Tree estate, for T.C.: *K. E. Millard & Co., Ltd., Langley, Birmingham. Construction of inf. welfare centre, for BC: *Wm. Wilkinson, Ltd., Hutton-rd., Birmingham.

Winchester.—102 houses, Weeke Manor estate, for City C. P. H. Warwick, MIMunE, MTPI, LRIBA, Guildhall, Winchester. Quantities by A. S. Wilson & Partners, 8, Storey's-gate, SW1: *Brazier & Son, Ltd., 333, Portswood-rd., Southampton, £142,508.

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